CR-IR346RU Service Manual

Machine Description (MD)

CR-IR346RU Service Manual – Contents

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Control Sheet

Issue date	Revision number	Reason	Pages affected
10/10/2000	00	New release (FM2887)	All pages
08/30/2001	01	Revisions associated with release of version A05 (FM3058)	1–3, 5, 9–11, 14–21, 21.1–21.4, 32, 42, 43, 46, 47, 49, 50

1. Machine Overview

1.1 Features

■ Features of the Machine

- The CR-IR346RU is built in a more compact body designed with smaller scanning optics and light-collecting units.
- The machine is network connectable via TCP/IP.
- A commonly available power source may be used to supply power to the machine.

1.2 System Configuration

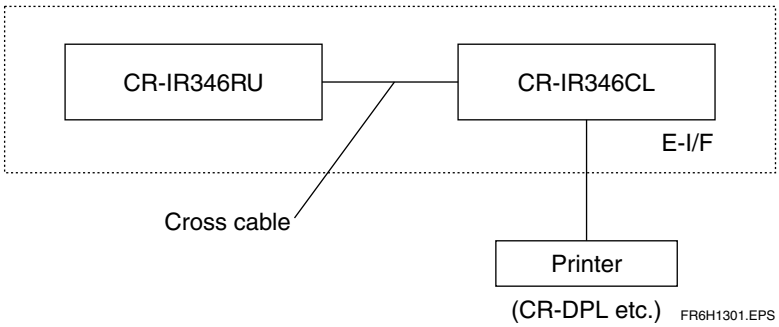
The CR-IR346RU may be configured in several combinations.

Basic system configuration examples are described here.

■ System Configuration Example (1)

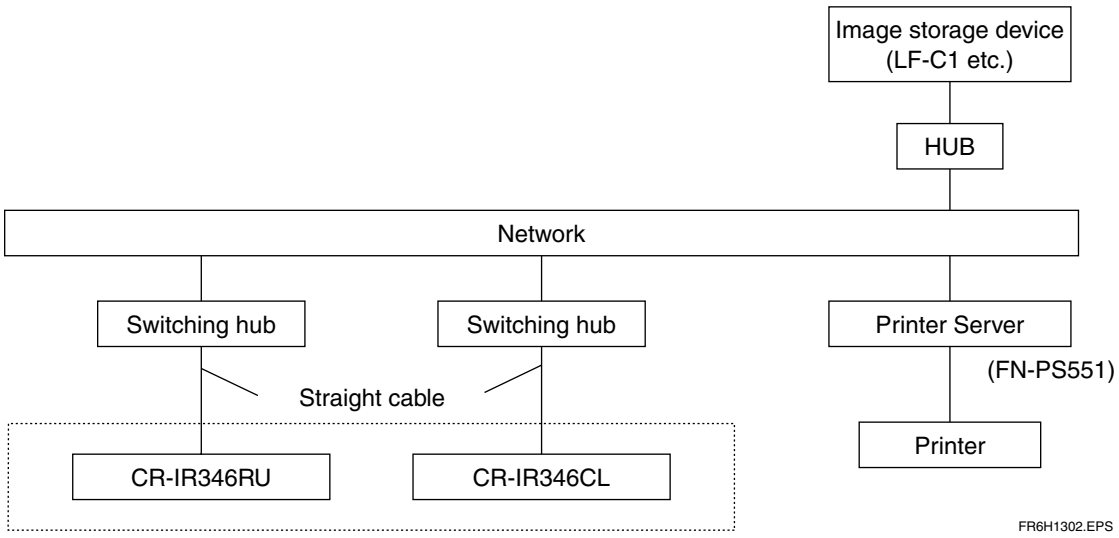
The machine is directly connected to the CL.

In this case, the CL may be connected only to a printer.



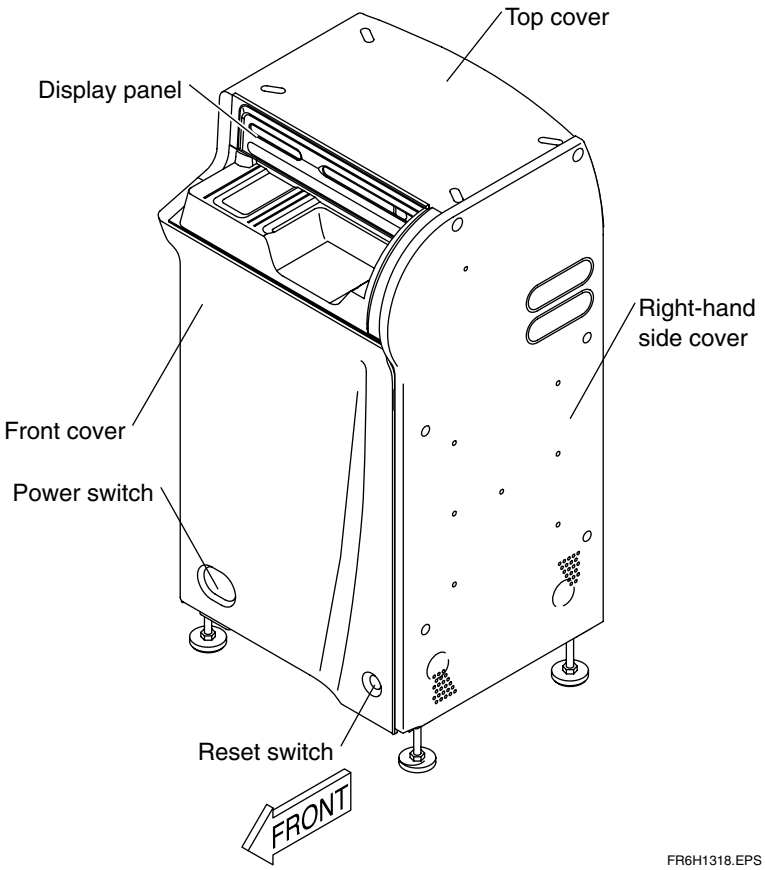
■ System Configuration Example (2)

The machine is connected to the CL via a network.



1.3 Overall Machine Configuration and Component Names

■ External View of Machine



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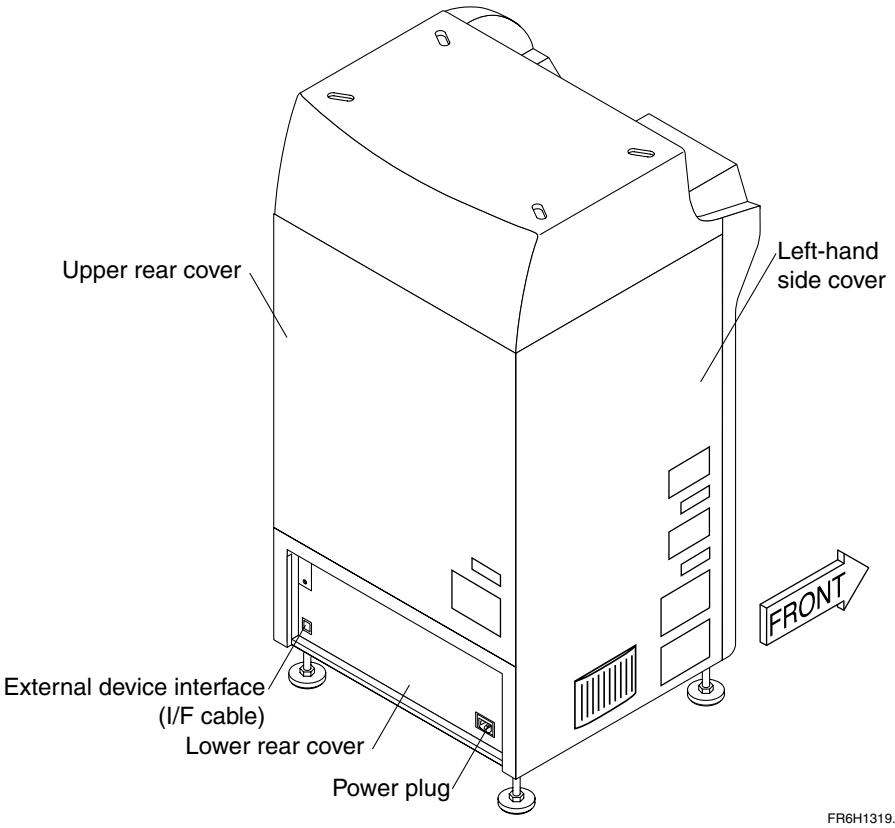

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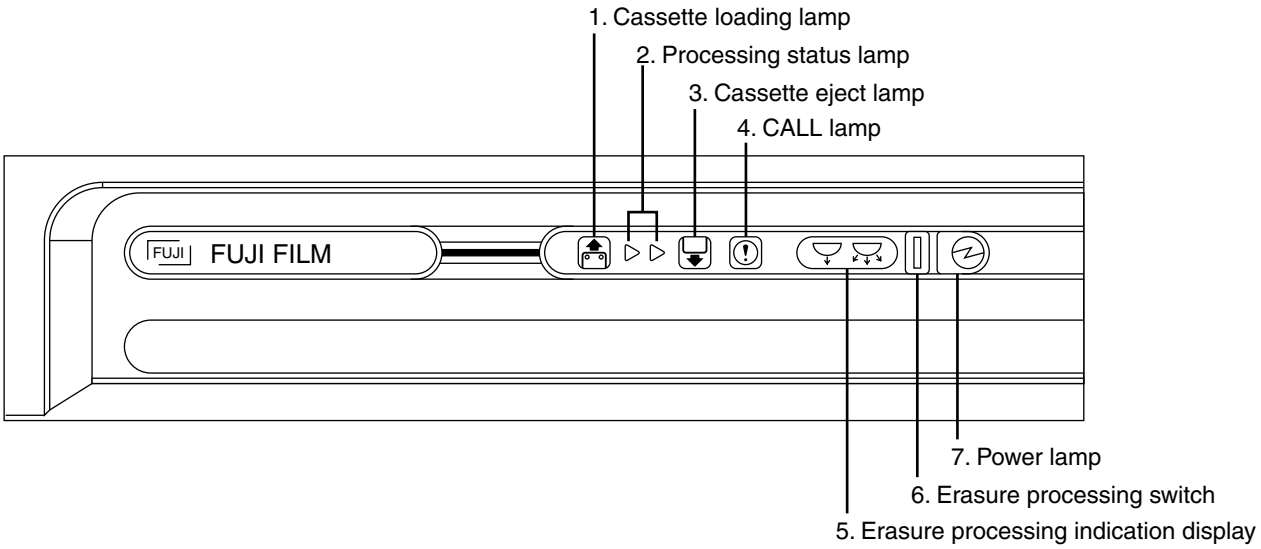
■ Display Panel Indicators



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No.	Name	Lighting	Functional description
1	Cassette loading lamp	Lit in green	It is lit when the machine boots up normally. It also indicates that the cassette is loadable.
2	Processing status lamp	Blink in green	It indicates the processing status of the IP within the machine.
3	Cassette eject lamp	Lit in green	It indicates that the cassette processed may be ejected.
4	CALL lamp	Lit in yellow	When the CALL lamp is lit, an audible alarm is generated, with a popup window displayed on the screen of the CR-IR346CL. The message (instruction) given in the window should be observed to perform the procedures as appropriate.
5	Erasure processing status display	Lit in green	It is lit when the primary erasure processing mode is selected.
		Lit in green	It is lit when the secondary erasure processing mode is selected.
6	Erasure processing switch	———	• This switch is used to execute erasure processing (either primary or secondary erasure) on the IP within the cassette. The switch toggles from read processing mode to primary erasure processing mode to secondary erasure processing mode and back to read processing mode. • By pressing this switch together with the power switch, the network-related setting of the RU's configuration settings is temporarily initialized. This initialization setup will be canceled by resetting the RU. (This feature is applicable to software version A03 or later.)
7	POWER lamp	Lit in green	It is lit when power is turned ON.

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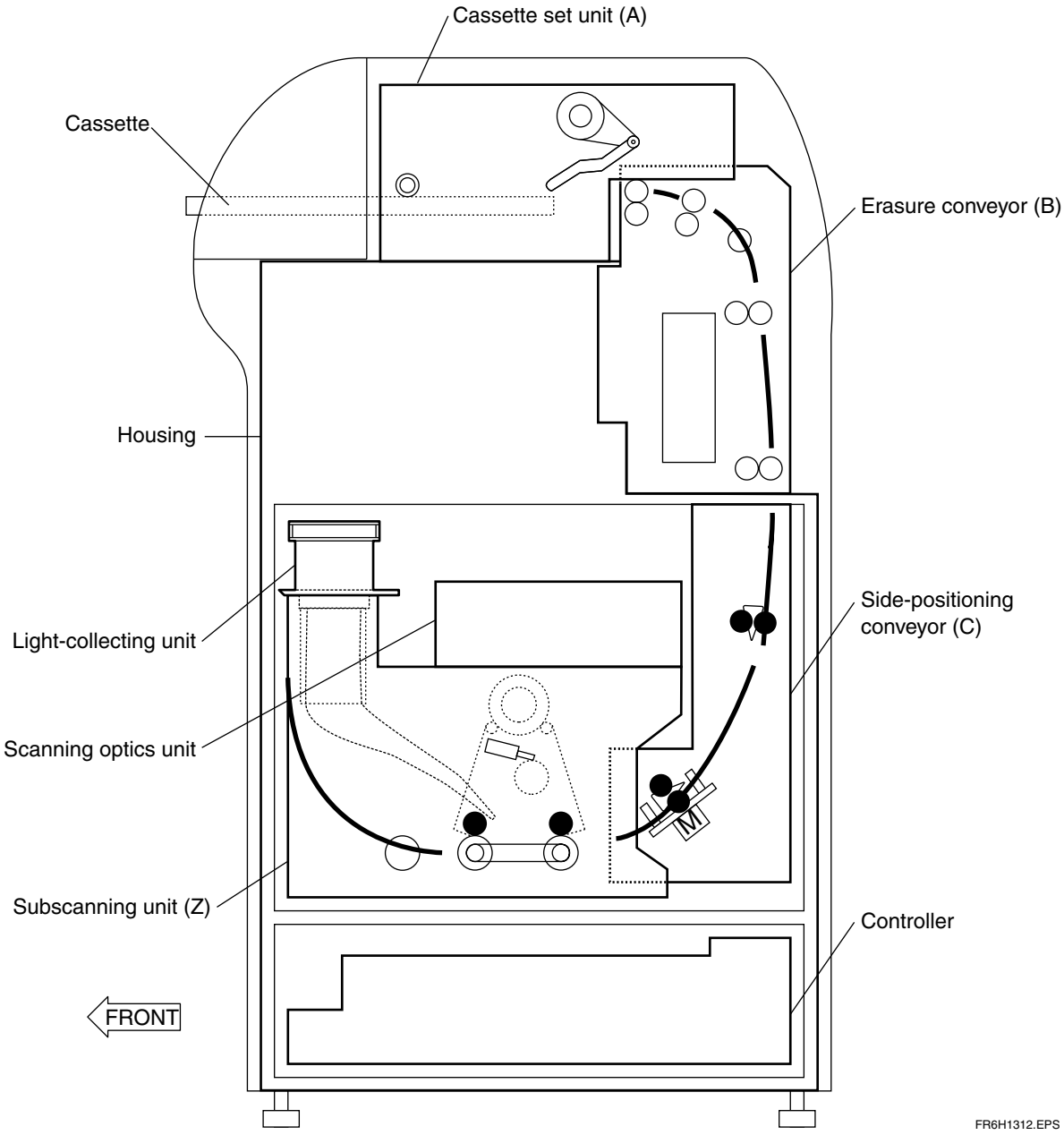
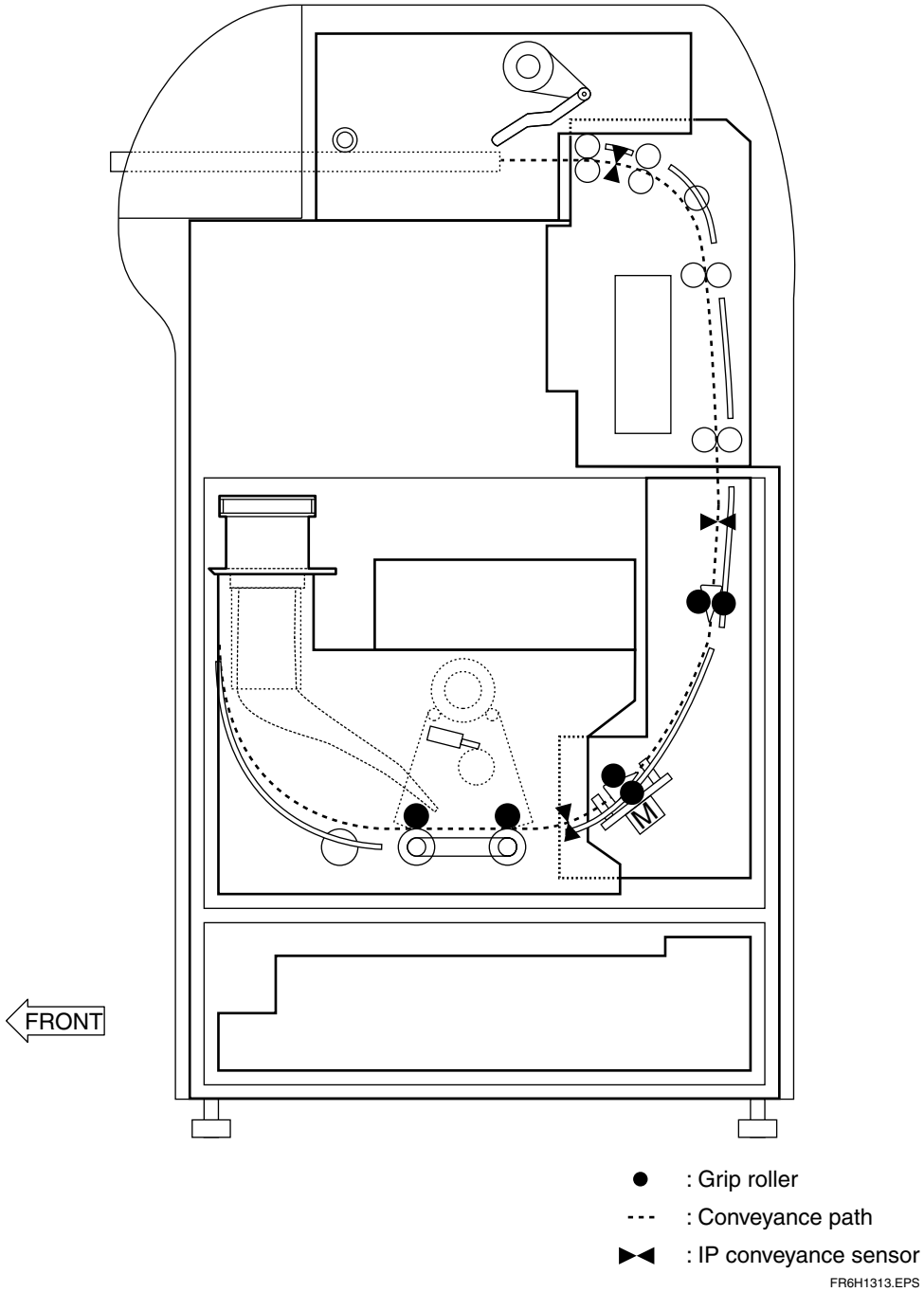
1.4 Machine Components

1.4.1 Unit Locations

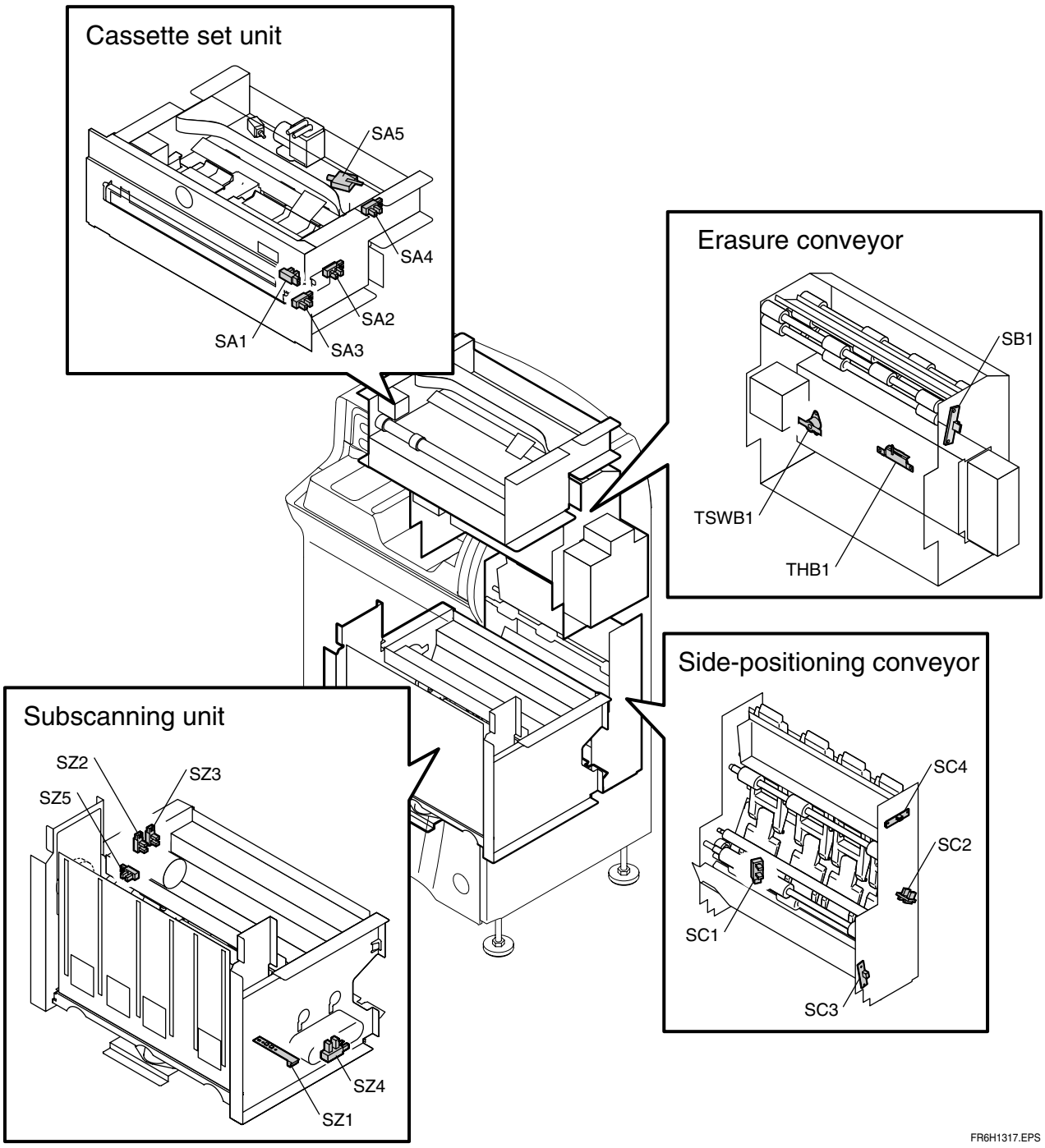


1.4.2 Roller Locations and Conveyance Paths



1.4.3 I/O Locations and Functional Descriptions

■ I/O Locations (Sensors and Thermistors)



■ I/O List (Sensors and Thermistors)

● Cassette set unit

Symbol	Name	Type	Function
SA1	Cassette eject sensor	PI (5mm)	Detects that the cassette is ejected.
SA2	Cassette IN sensor	PI (5mm)	Detects that the cassette is inserted.
SA3	Hold sensor	PI (5mm)	Detects that the cassette is in the hold state.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup arm is in its home position.
SA5	Suction sensor		Detects that the suction cup sucks the IP.

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● Erasure conveyor

Symbol	Name	Type	Function
SB1	IP sensor	PI (19mm)	Detects that the IP is present due to conveyance. It also measures the elapsed time for the IP.
THB1	Lamp temparature sensor	Thermistor	Detects the temperature within the erasure lamp assembly.
TSWB1	Safety thermostat operation sensor	Thermal switch	Detects the temperature at the reflection plate of the erasure unit.

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● Side-positioning conveyor

Symbol	Name	Type	Function
SC1	Side-positioning HP sensor	PI (5mm)	Detects that the side-positioning mechanism is in its home position.
SC2	Grip HP sensor	PI (5mm)	Detects that the grip roller is in its home position.
SC3	IP sensor	PI (19mm)	Detects that the IP is present due to conveyance. It also detects IP positioning during side-positioning operation.
SC4	IP sensor	PI (19mm)	Detects that the IP is present due to conveyance. It also detects IP positioning during erasure operation.

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● Subscanning unit

Symbol	Name	Type	Function
SZ1	IP leading-edge sensor	Laser light receptor	Detects the leading edge of the IP during reading.
SZ2	Driving-side grip operation sensor	PI (5mm)	Detects the driving-side grip condition.
SZ3	Driven-side grip operation sensor	PI (5mm)	Detects the driven-side grip condition.
SZ4	IP stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SZ5	Dust removal HP sensor	PI (5mm)	Detects that the dust removal brush is in its home position.

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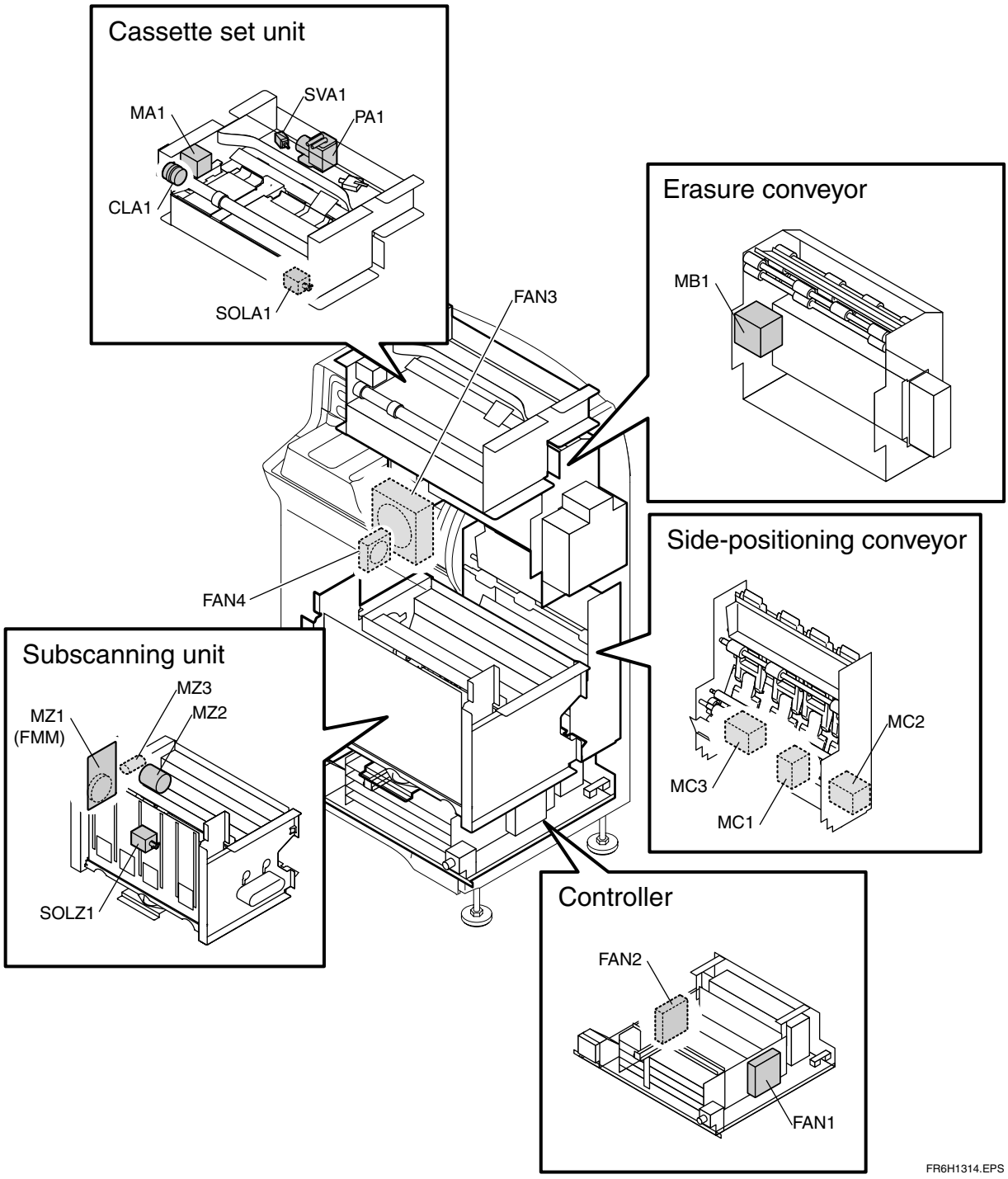
■ I/O Locations (Motors, Clutch, Solenoids, Pump, Valves, Solenoid Valve, Fans)



■ I/O List (Motors, Clutch, Solenoids, Pump, Valves, Solenoid Valve, Fans)

● Cassette set unit

Symbol	Name	Type	Function
MA1	Suction cup drive motor	Pulse motor	Drives the suction cup arm and ejects the cassette when the clutch is turned ON.
PA1	Suction pump	DC pump	Sucks the IP.
SVA1	Leak valve	Solenoid valve	Leaks the IP.
SOLA1	Cassette hold solenoid	Power-down solenoid	Holds/releases the hold pin.
CLA1	Cassette ejection clutch	Clutch	Interlinks the motor and roller when the cassette is ejected.

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● Erasure conveyor

Symbol	Name	Type	Function
MB1	Transport motor	Pulse motor	Conveys the IP.

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● Side-positioning conveyor

Symbol	Name	Type	Function
MC1	Side-positioning motor	Pulse motor	Drives the side-positioning mechanism.
MC2	Grip motor	Pulse motor	Grips/releases the grip roller.
MC3	Transport motor	Pulse motor	Conveys the IP.

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● Subscanning unit

Symbol	Name	Type	Function
MZ1	Subscanning motor	FFM	Conveys the IP during reading.
MZ2	Grip drive motor	DC motor	Grips/releases the driven-side grip roller and driving-side grip roller.
MZ3	Dust removal motor	Brushless DC motor	Removes dust deposited on the light-collecting guide and mirror.
SOLZ1	IP stopper solenoid	Power-down solenoid	Stops/releases the IP conveyance.

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● Controller

Symbol	Name	Type	Function
FAN1	Board cooling fan	DC fan	Cools the controller boards (outtake)
FAN2	Board cooling fan	DC fan	Cools the controller boards (intake)

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● Housing

Symbol	Name	Type	Function
FAN3	Erasure unit cooling fan	DC fan	Cools the erasure unit.
FAN4	Inverter cooling fan	DC fan	Cools the fluorescent lamp ballast and inverter board.

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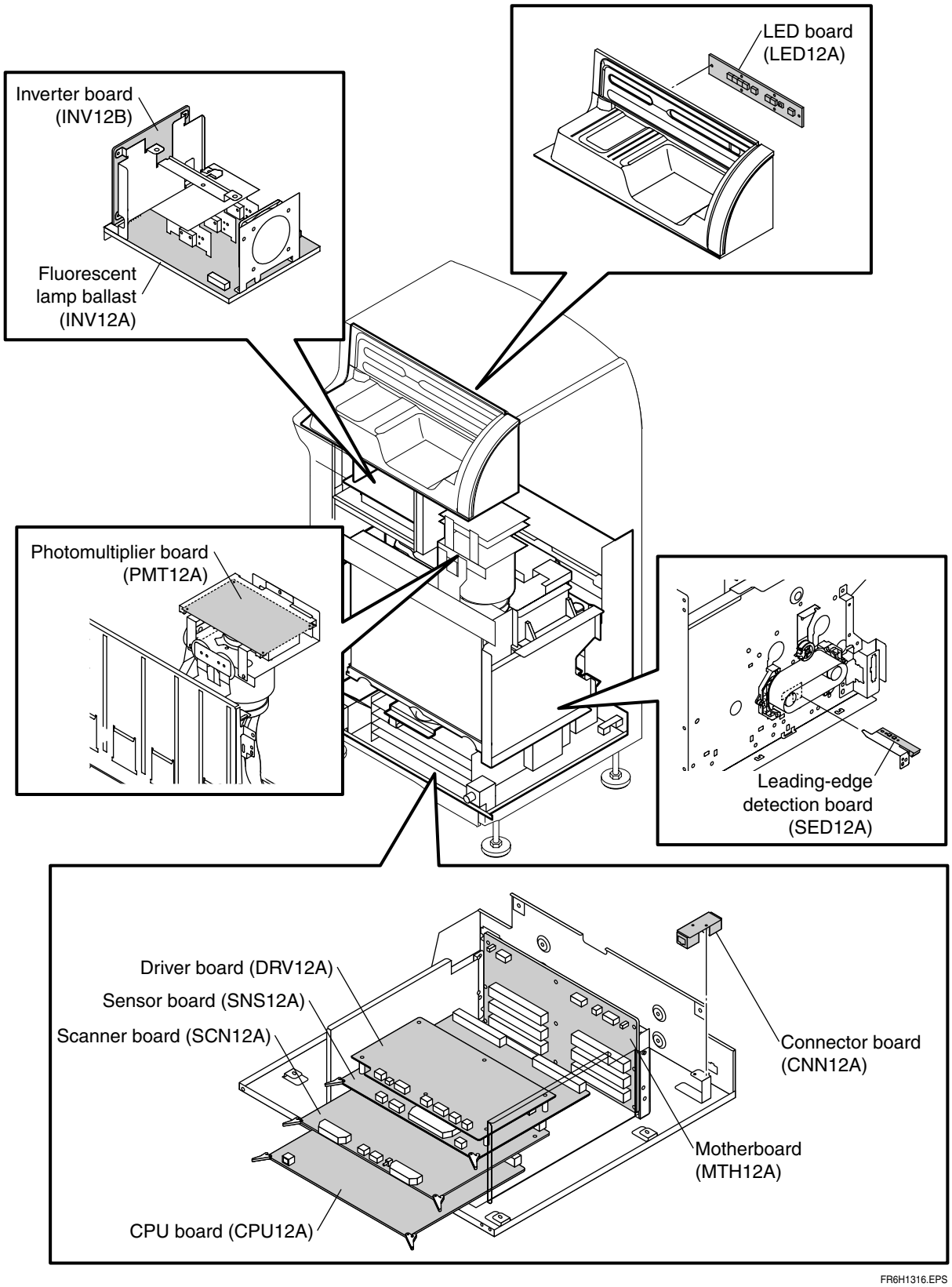
1.4.4 Board Locations



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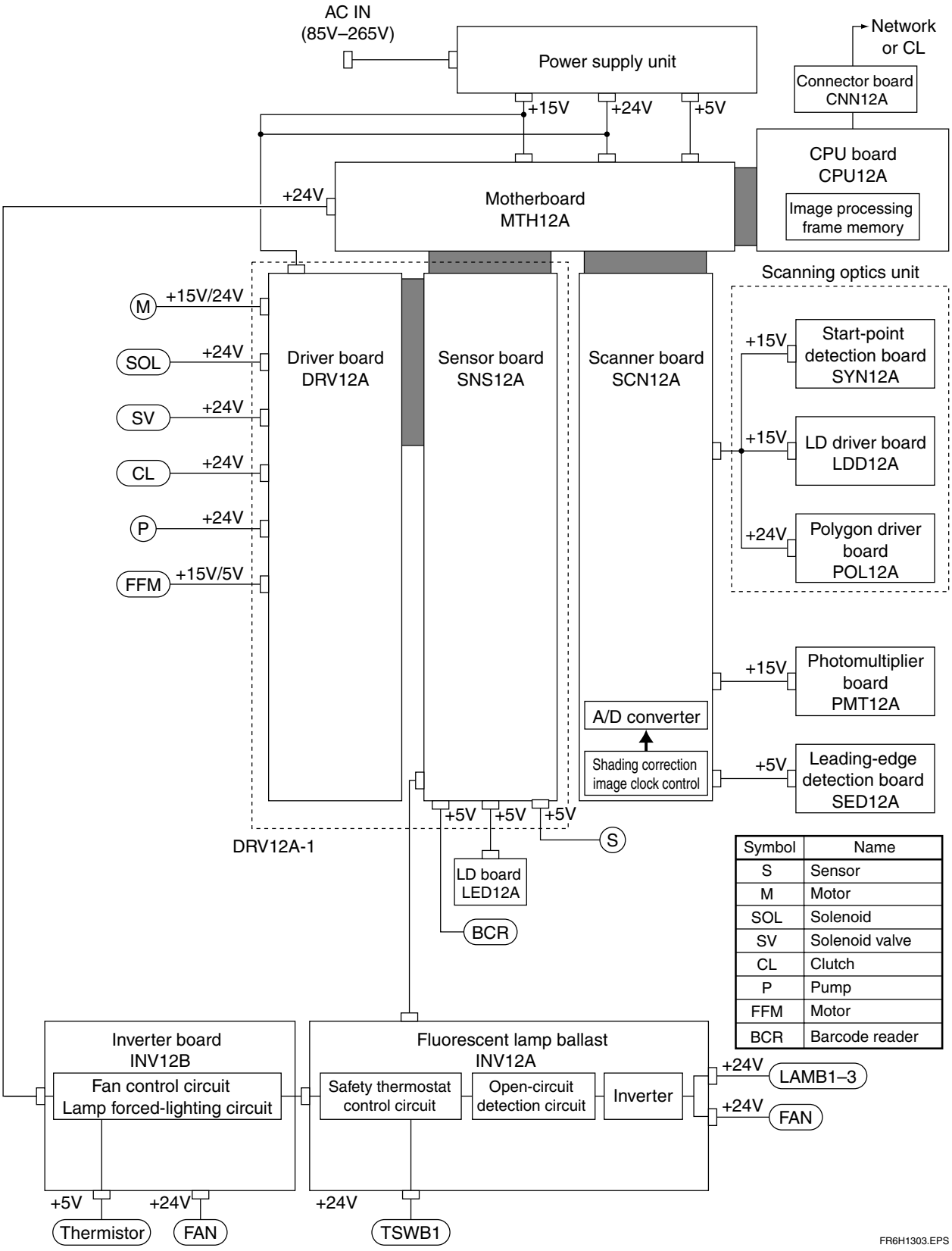
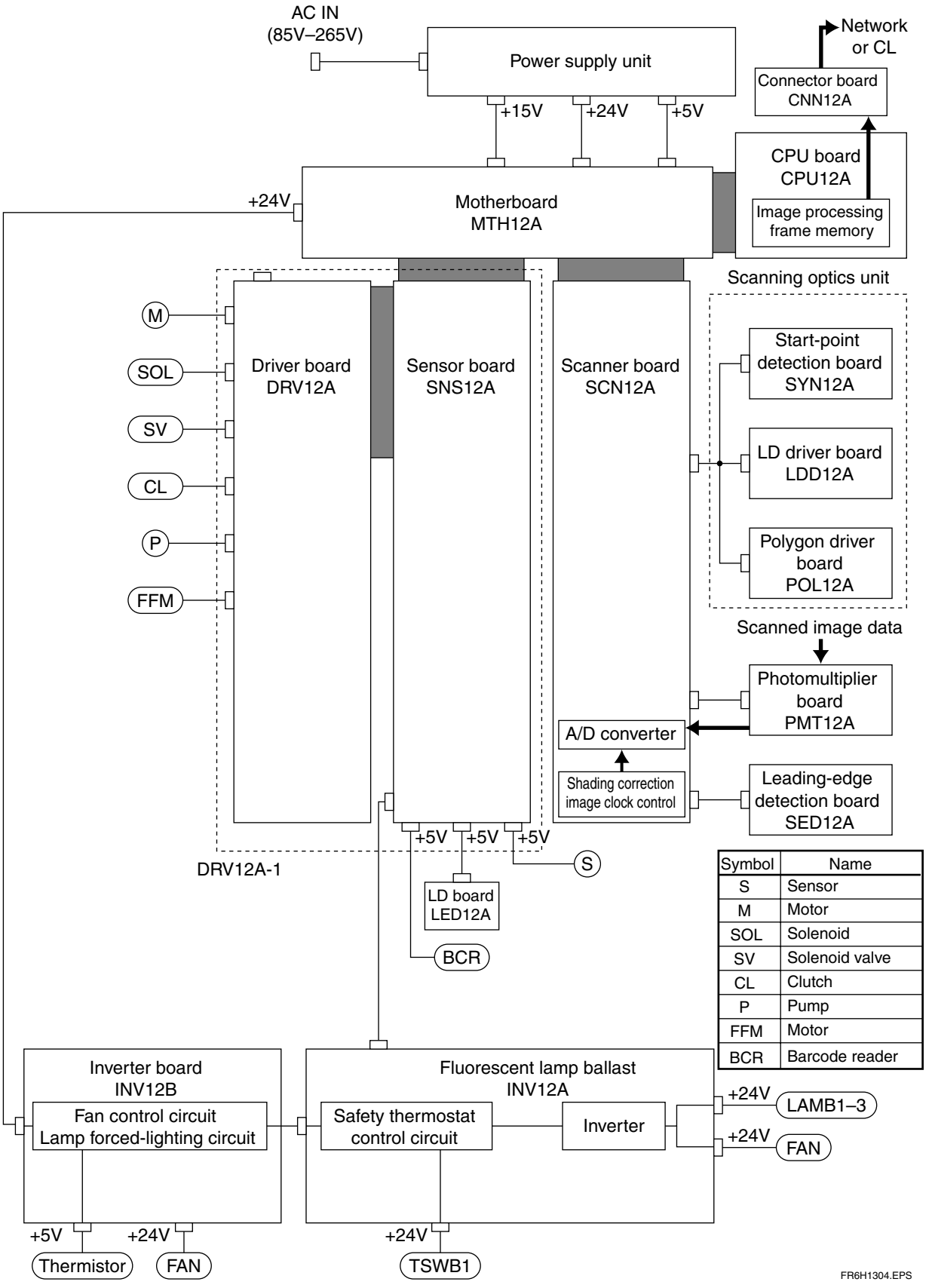
1.5 System Block Diagram

■ Power Supply System



Symbol	Name
S	Sensor
M	Motor
SOL	Solenoid
SV	Solenoid valve
CL	Clutch
P	Pump
FFM	Motor
BCR	Barcode reader

■ Signal System



2. Descriptions of Software Control

2.1 Relationship between RU and CL

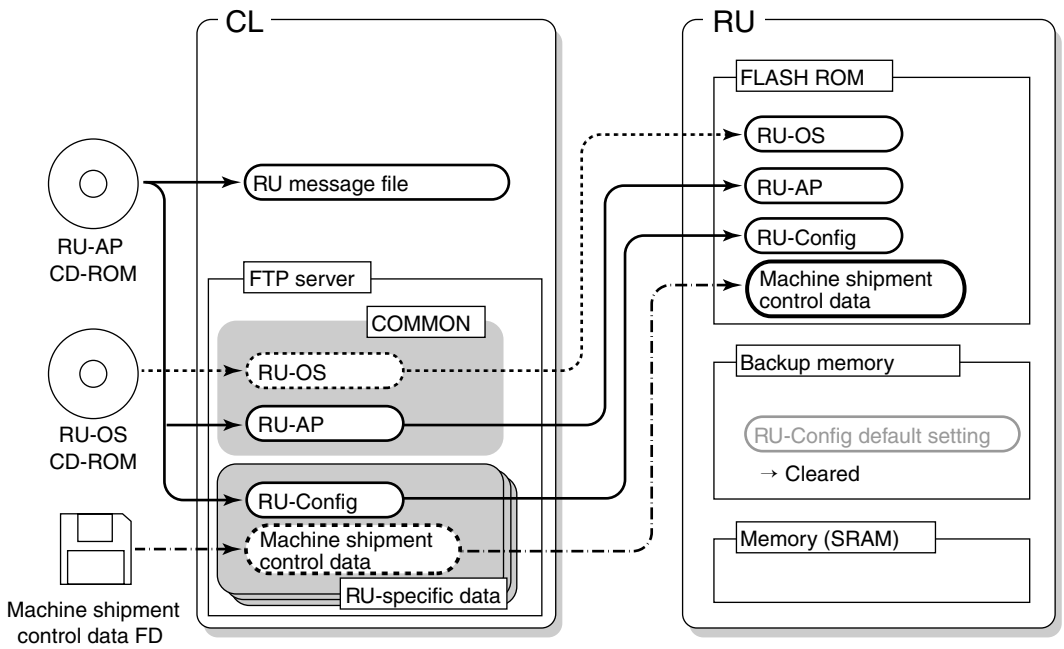
This chapter describes exchanging of data between CL and RU, which is implemented when the CL is connected to the RU.

◆***NOTE***◆

In this chapter, “application”, “operating system”, and “RU configuration” are abbreviated as AP, OS, and RU-Config, respectively.

2.1.1 RU Software (AP/OS) and Data Flow

■ Data flow in installation process



Those marked by (dotted) represent data that is temporarily stored in the FTP server, exclusively for transferring the data to the RU.
Those marked by (solid) represent data that is always stored for comparison with the data in the RU's flash ROM.

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● RU-AP (solid-line arrow)

When RU-AP is installed, the RU-AP, RU-Config, and RU message file are copied to the CL.

The RU-AP and RU-Config are copied to the flash ROM via the network.

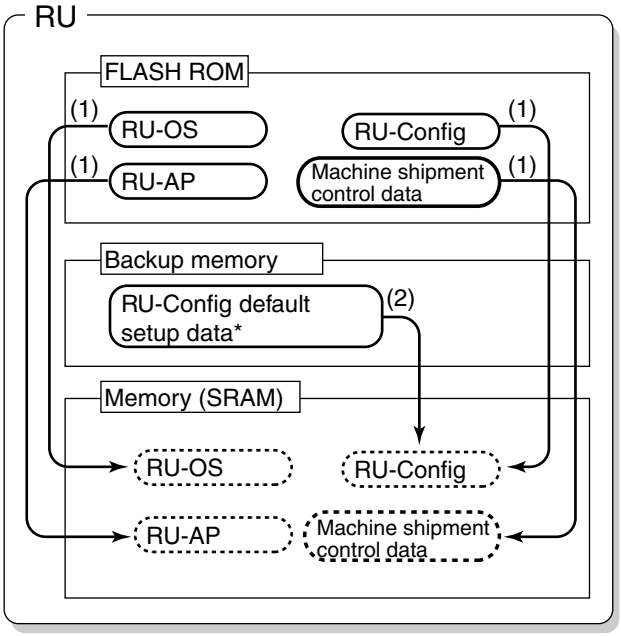
◇REFERENCE◇

The RU message file is a file that contains details on the RU's error information. It is used to cause the error code and error information detail to be displayed on the CL monitor by using, as a key, the error code generated on the RU.

● RU-OS (dotted-line arrow)/machine shipment control data (alternate-long-and-short-dash-line arrow)

The RU-OS and machine shipment control data are copied to the RU's flash ROM via the FTP server of the CL.

■ Data flow in RU boot



* It includes network setup items
(such as default IP addresses of the RU and CL, etc.).

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When the RU is booted, the data in the flash ROM is copied into the memory (SDRAM) (arrow (1)).

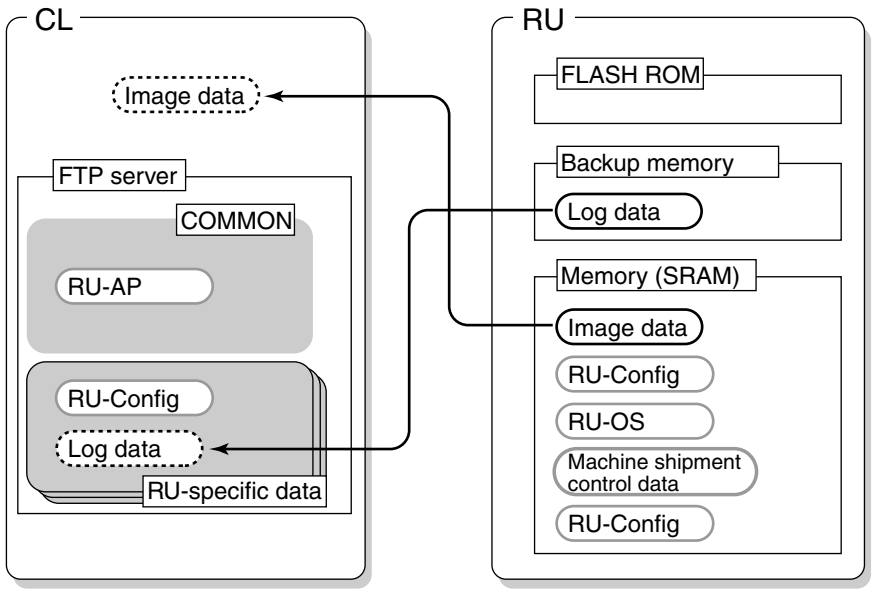
If the default setup data of the RU-Config resides in the backup memory, that data is used to overwrite the RU-Config in the memory (arrow (2)).

◇*REFERENCE*◇

Normally, the backup memory does not contain the default setup data of the RU-Config. Only when one of the following operations is performed, it is written into the backup memory.

- *When the RU is powered ON while holding down the <erasure processing> switch.*
- *When "Temporary Setting" for the backup memory is performed in the RU's Maintenance Utility.*

■ Data flow in normal process



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● Image data

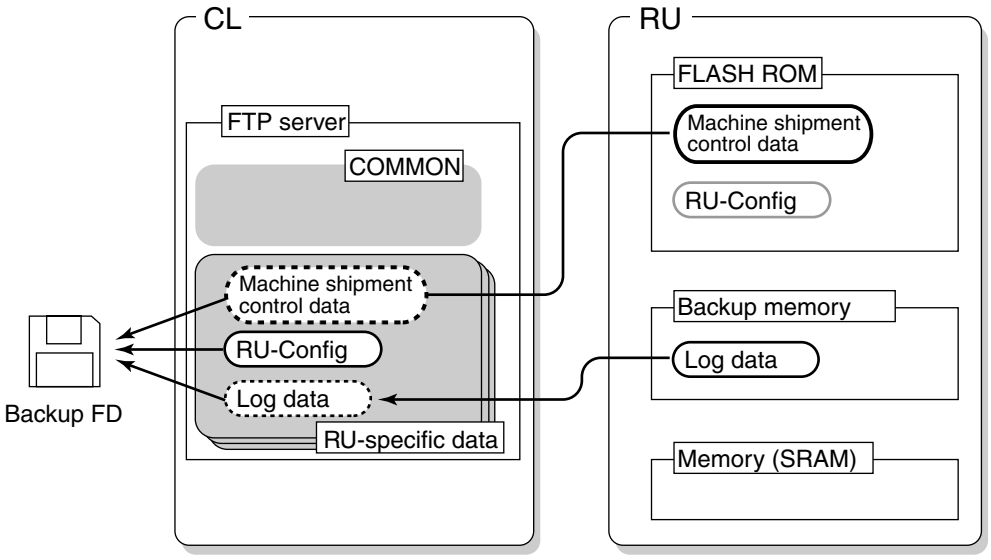
The image data scanned from the IP is temporarily stored in the SRAM, and then transferred to the CL via the network.

● Log data

The log data is copied, as needed, by the RU-AP to the FTP server of the CL.

■ Data flow in backup and restore

To backup and restore various types of data for the RU, RU M-Utility should be used.



● Log data

A set of log data stored in the backup memory is backed up to the FD in accordance with the flow as illustrated above.

Note, however, that the log data cannot be restored.

● RU-Config

The RU-Config stored in the FTP server is backed up to the FD. For restore, the data in the FD is copied to the FTP server.

● Machine shipment control data

The machine shipment control stored in the flash ROM is backed up to the FD in accordance with the flow as illustrated above.

For restore, it is copied to the flash ROM via the FTP server.

2.1.2 Mechanism for Updating RU-AP and RU-Config

The RU itself is not equipped with any input device that allows for directly overwriting the internal data of the RU (such as RU-AP, RU-Config, etc.) Thus, the internal data of the RU should be overwritten by using a personal computer (PC) connected to the network.

Basically, for CL-RU connection, the CL-PC should be employed.

Updating of the RU-AP and RU-Config is performed in accordance with the following flow.

When the CL-AP is started, a comparison is made between the RU-AP and RU-Config stored in the flash ROM and FTP server, respectively. If any difference is found as a result of the comparison, the flash ROM is overwritten by the data in the FTP server.

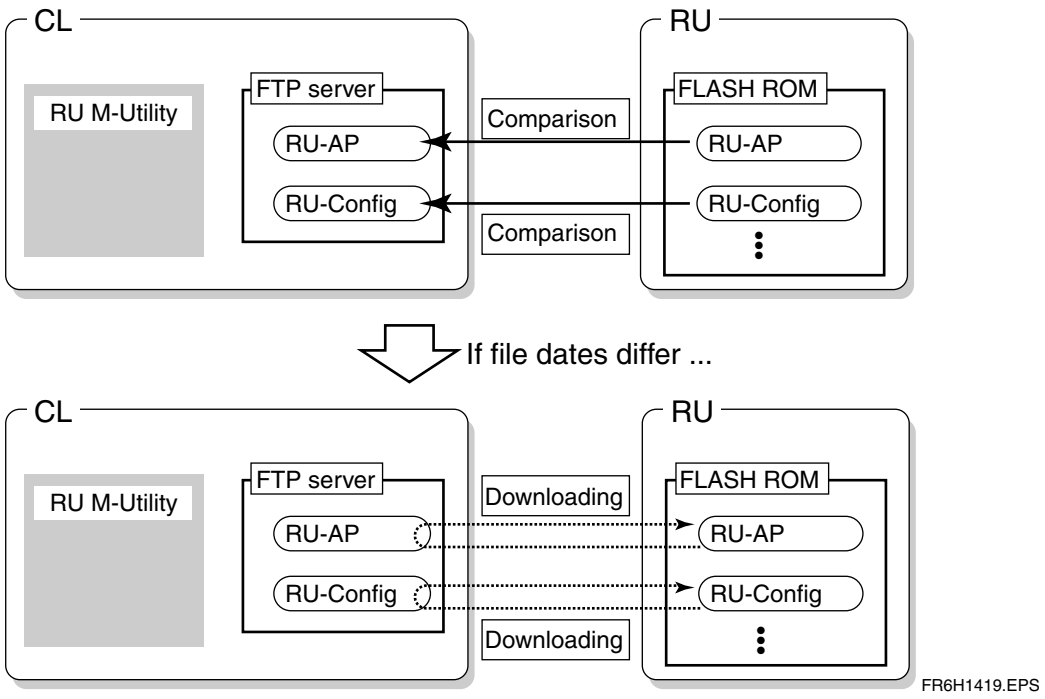
◇*REFERENCE*◇

For communication between the RU and CL, ftp (one of network protocols for exchanging files between terminals) is used.

The comparison for the RU-AP and RU-Config is based on the dates of the files.

◆ *NOTE* ◆

Care should be exercised because, even when the FTP server contains files dated older than those in the flash ROM, the data in the flash ROM is updated.



◇*REFERENCE*◇

For the RU to operate properly, not only the RU-AP and RU-Config must be stored in the flash ROM of the RU, but also the RU-AP and RU-Config that are identical to those in the flash ROM must always reside in the FTP server.

For example, when the RU-AP version is to be updated from A00 to A01, the flow of steps presented below is followed.

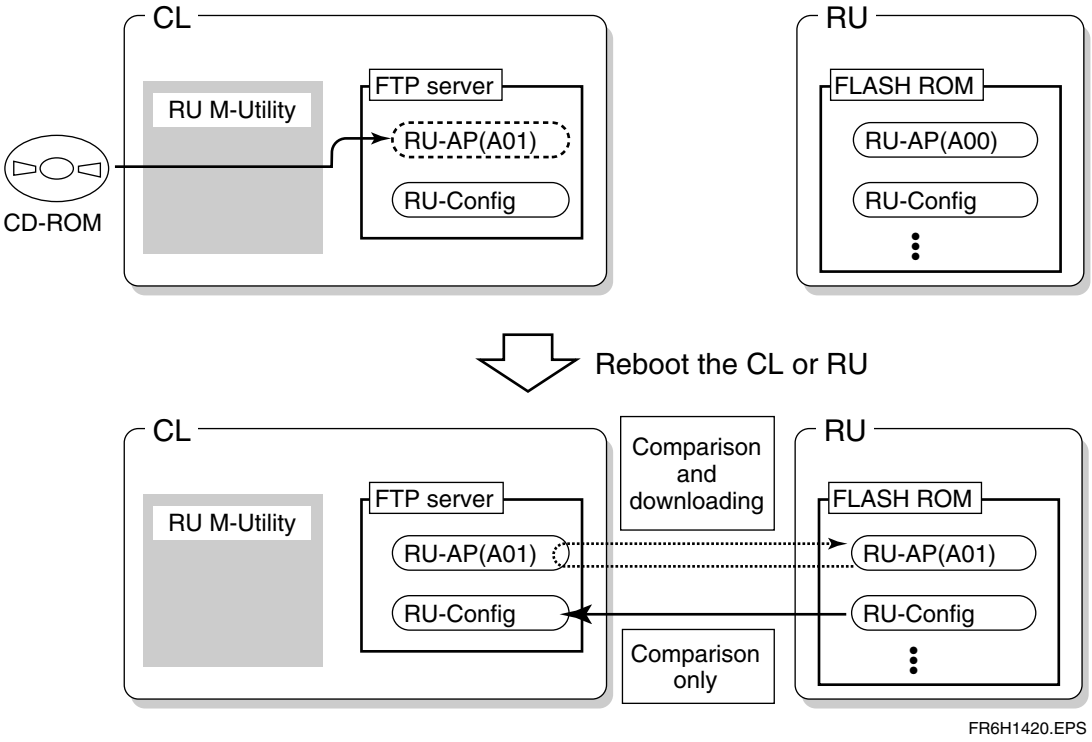
1. Install the RU-AP of version A01 in the FTP server of the CL.

2. Reboot either the CL or RU.

   During bootup, the data in the FTP server and flash ROM are compared.

   As a result of the comparison, the contents of A00 and A01 are different from each other, the RU downloads the RU-AP of version A01 from the FTP server and updates version A00 in the flash ROM with the data of version A01.

   Because the contents of the RU-Config are not rewritten, only comparison is made and the data in the flash ROM is not overwritten.



◆NOTE◆

When the version of RU-AP has been updated, the date of the RU-Config file may be changed in the following scenarios.

- *When the date is changed: The contents of the RU-Config have been changed prior to the version update (including the RU-Config setup screen that appears during RU-AP installation).*
- *When the date is not changed: The contents of the RU-Config have not ever changed.*

◇REFERENCES◇

- *To install the RU-AP to the FTP server, RU M-Utility should be used.*
- *RU M-Utility is a utility tool designed exclusively for the RU to perform tasks, such as RU-AP installation, RU-Config setting, etc.*
  Because this tool is required to install the RU-AP or set up the RU-Config, it is necessary to install RU M-Utility beforehand. RU M-Utility is contained in the CD bundled with the RU.

■ Updating with the M-Utility

The following RU software and data are not to be automatically updated. Therefore, use the M-Utility to update them.

- RU OS (MAIN CPU IPL and SUB CPU IPL)
- Machine shipment control data

2.2 RU Error Handling

When an I/O (mechanism, scanner, etc.) abnormality occurs on the preceding models, the system used to shuts down handling then it as a fatal error.

The RU, however, performs a retry process except when it is inoperative.

● Retry operation

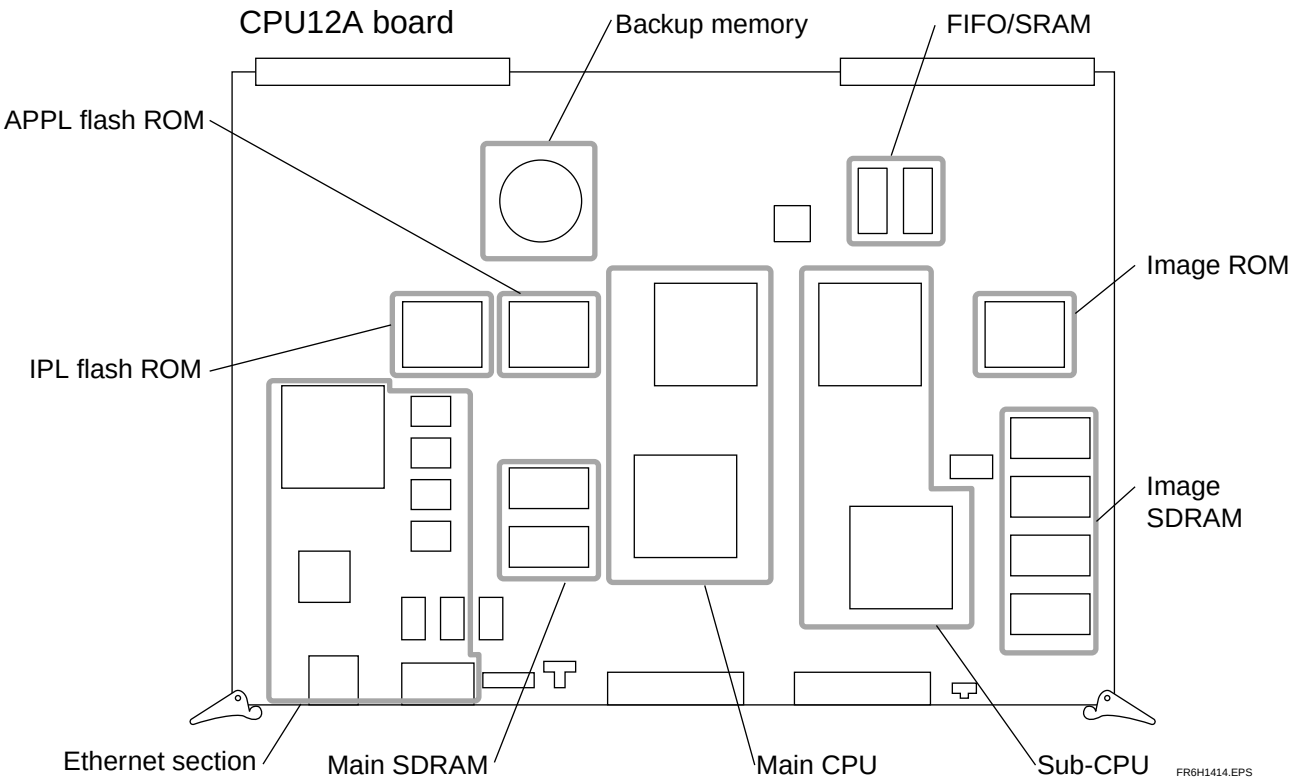
- If an I/O (mechanism, scanner, etc.) abnormality occurs between cassette insertion and IP read, the system returns the IP to the cassette.
- If a scanner unit I/O (mechanism, scanner, etc.) abnormality occurs at the beginning of an IP read, the system continues processing as needed to achieve cassette ejection.

● State where the system is inoperative

- When the CPU functions of the SCN12A board and CPU12A board become inoperative
- When power supply voltage output is stopped
- When the communication between the RU and the CL is stopped

2.2.1 CPU12A Board Functions

- Two CPUs are incorporated: main CPU (RU control) and sub-CPU (image control).
- This board consists of an IPL flash ROM, APPL flash ROM, backup memory, FIFO/SRAM, image ROM, image SDRAM, main SRAM, and Ethernet section.
- The sub-CPU (image control) reduces an image to 2/3. The Ethernet section transmits the image in several lines at a time to the CL.



3. Descriptions of Electrical Operations

3.1 Power Supply Voltage Output Detection Function

To facilitate early recovery from a failure, the RU incorporates the power supply voltage output detection function, which offers the following features:

- Each load circuit incorporates a fuse that servers to isolate a fault.
- The isolation points are provided with a current detection circuit, which constantly monitors the power supply voltage output.
- The detection point can be identified by checking the combination of current detection circuits (points) in which an error has occurred.

● Fuses and detection points

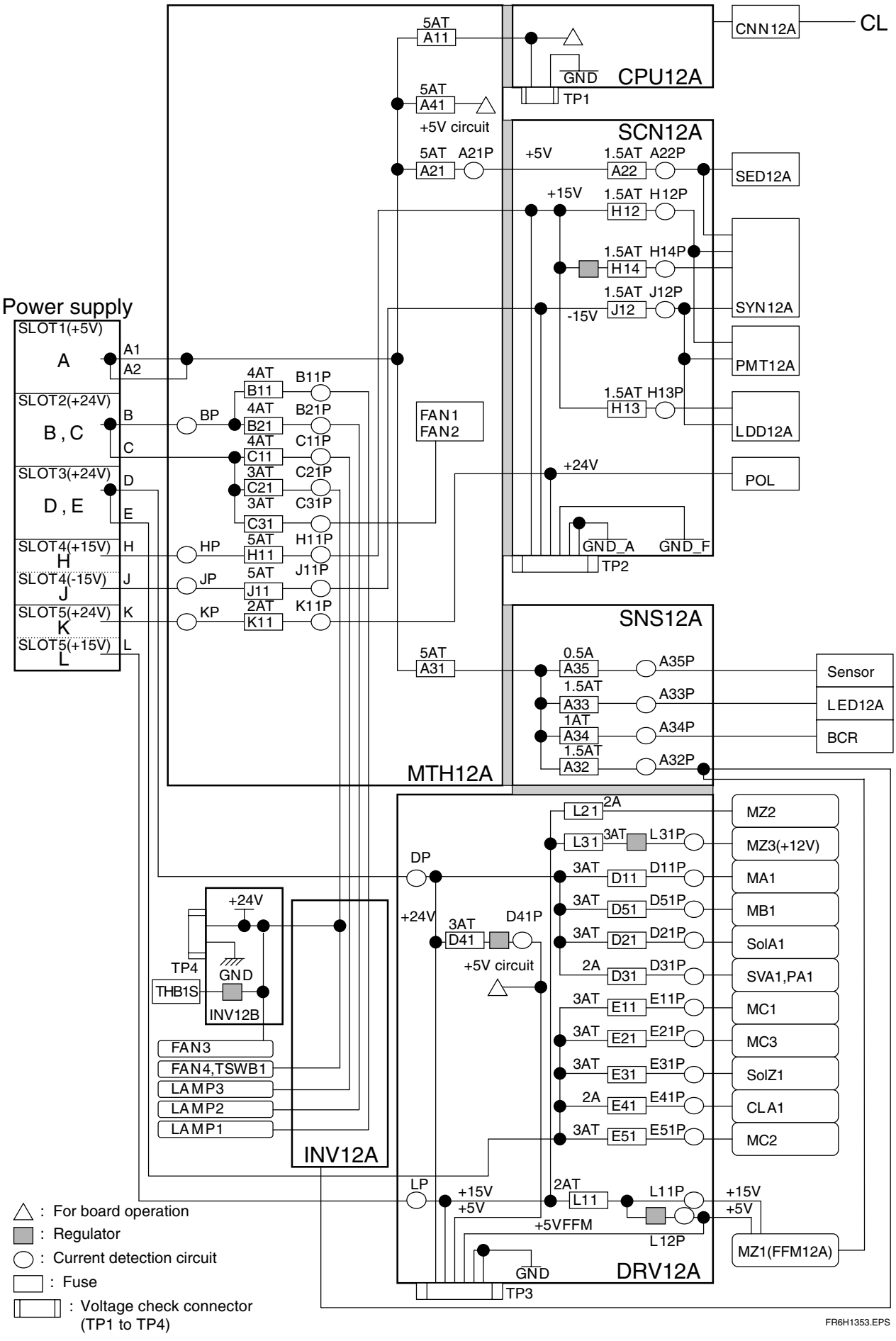
Power Supply	Board Name	Fuse No.		Target for Protection	Detection Point
SLOT1 (+5V)	MTH12A	A11		CPU12A board	LED on CPU12A
		A21		SCN12A board	A21P
		A31		SNS12A board	LEDPON on LED12A
		A41		MTH12A	None
	SCN12A	A21	A22	SZ1 (SED12A board)	A22P
	SNS12A	A31	A32	MZ1(FFM12A),INV12A	A32P
		A31	A33	LED12A board	A33P
		A31	A34	BCR (option)	A34P
		A31	A35	Each sensor	A35P
SLOT2 (+24V)	MTH12A	B11		INV12A board (for LAMB1)	B11P
		B21		INV12A board (for LAMB2)	B21P
		C11		INV12A board (for LAMB3)	C11P
		C21		INV12A/B board, FAN3/4, TSWB1, THB1S	C21P
		C31		FAN1,FAN2	C31P
SLOT3 (+24V)	DRV12A	D11		MA1	D11P
		D21		SolA1	D21P
		D31		SVA1,PA1	D31P
		D41		DRV12A board	D41P
		D51		MB1	D51P
		E11		MC1	E11P
		E21		MC3	E21P
		E31		SolZ1	E31P
		E41		CLA1	E41P
		E51		MC2	E51P
SLOT4 (+15V)	MTH12A	H11		SCN12 board	H11P
	SCN12A	H11	H12	SYN12A & PMT12A boards	H12P
		H11	H13	LDD12A board	H13P
		H11	H14	5V system SYN12A board	H14P
SLOT4 (-15V)	MTH12A	J11		SCN12A board	J11P
	SCN12A	J11	J12	SYN12A, PMT12A & LDD12A boards	J12P
SLOT5 (+24V)	MTH12A	K11		POL	K11P
SLOT5 (+15V)	DRV12A	L11		MZ1(FFM12A)+15V	L11P
		L11		MZ1(FFM12A)+5V	L12P
		L31		MZ3	L31P

● Points detected with no fuses

Power Supply	Position of Implementation	Target for Detection	Detection Method
SLOT2(+24V)	MTH12A	+24V for INV12A	BP
SLOT3(+24V)	DRV12A	+24V for DRV12A	DP
SLOT4(+15V)	MTH12A	+15V for SCN12A	HP
SLOT4(-15V)	MTH12A	-15V for SCN12A	JP
SLOT5(+24V)	MTH12A	+24V for POL	KP
SLOT5(+15V)	DRV12A	+15V for DRV12A	LP

TR6H1313.EPS

● CCR overcurrent protection circuit block diagram



● 5 V power supply (slot 1): A

Error Code	Detection Point						Error Name
	A21	A22	A32	A33	A34	A35	
12810	1	1	1	1	1	1	Power supply A error
12811	1	1	0	0	0	0	Power supply A21 error
12812	0	1	0	0	0	0	Power supply A22 error
12813	0	0	1	0	0	0	Power supply A32 error
12814	0	0	0	1	0	0	Power supply A33 error
12815	0	0	0	0	1	0	Power supply A34 error
12816	0	0	0	0	0	1	Power supply A35 error
12817	0	0	1	1	1	1	Power supply A3 error
12818	1	0	—	—	—	—	Power supply A row abnormal detected
12819	*						Power supply A system error

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12810 to 12818.

TR6H1315.EPS

● 24 V power supply (slot 2): B and C

Error Code	Detection Point					Error Name
	B	B11	B21	C11	C21	
12820	1	1	1	1	1	Power supply BC error
12823	0	1	0	0	0	Power supply B11 error
12824	0	0	1	0	0	Power supply B21 error
12825	0	0	0	1	0	Power supply C11 error
12826	0	0	0	0	1	Power supply C21 error
12821	0	0	0	1	1	Power supply C error
12822	1	1	1	0	0	Power supply B error
12827	1	0	—	—	—	Power supply B row abnormal detected
	1	—	0	—	—	Power supply B row abnormal detected
12828	*					Power supply BC system error

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12820 to 12827 and any bit is 1.

TR6H1316.EPS

● 24 V power supply (slot 3): D and E

Error Code	Detection Point									Error Name
	D	D11	D21	D31	D41	E11	E21	E31	E41	
12830	1	1	1	1	1	1	1	1	1	Power supply DE error
12831	1	1	1	1	1	0	0	0	0	Power supply D error
12832	0	0	0	0	0	1	1	1	1	Power supply E error
12833	0	1	0	0	0	0	0	0	0	Power supply D11 error
12834	0	0	1	0	0	0	0	0	0	Power supply D21 error
12835	0	0	0	1	0	0	0	0	0	Power supply D31 error
12836	0	0	0	0	1	0	0	0	0	Power supply D41 error
12837	0	0	0	0	0	1	0	0	0	Power supply E11 error
12838	0	0	0	0	0	0	1	0	0	Power supply E21 error
12839	0	0	0	0	0	0	0	1	0	Power supply E31 error
12840	0	0	0	0	0	0	0	0	1	Power supply E41 error
12841	1	0	—	—	—	—	—	—	—	Power supply D row abnormal detected
	1	—	0	—	—	—	—	—	—	Power supply D row abnormal detected
	1	—	—	0	—	—	—	—	—	Power supply D row abnormal detected
	1	—	—	—	0	—	—	—	—	Power supply D row abnormal detected
12842	*									Power supply DE system error

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12830 to 12841 and any bit is 1.

TR6H1317.EPS

● 15 V power supply (slot 4): H

Error Code	Detection Point					Error Name
	H	H11	H12	H13	H14	
12850	1	1	1	1	1	Power supply H error
12851	0	1	1	1	1	Power supply H11 error
12852	0	0	1	0	0	Power supply H12 error
12853	0	0	0	1	0	Power supply H13 error
12854	0	0	0	0	1	Power supply H14 error
12855	—	1	0	—	—	Power supply H row abnormal detected
	—	1	—	0	—	Power supply H row abnormal detected
	—	1	—	—	0	Power supply H row abnormal detected
	1	0	—	—	—	Power supply H row abnormal detected
12856	*					Power supply H system error

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12850 to 12855.

TR6H1318.EPS

● -15 V power supply (slot 4): J

Error Code	Detection Point			Error Name
	J	J11	J12	
12860	1	1	1	Power supply J error
12861	0	1	1	Power supply J11 error
12862	0	0	1	Power supply J12 error
12863	1	0	—	Power supply J row abnormal detected
	—	1	0	Power supply J row abnormal detected
12864				Power supply J system error

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12860 to 12863.

TR6H1319.EPS

● 24 V power supply (slot 5): K

Error Code	Detection Point		Error Name
	K	K11	
12870	1	1	Power supply K error
12871	0	1	Power supply K11 error
12872	1	0	Power supply J row abnormal detected

<Bit indication>

1: Error

0: Normal

TR6H1320.EPS

● 15 V power supply (slot 5): L

Error Code	Detection Point					Error Name
	L	L11	L12	L21	L31	
12880	1	1	1	1	1	Power supply L error
12881	0	1	1	0	0	Power supply L11 error
12882	0	0	1	0	0	Power supply L12 error
12883	0	0	0	1	1	Power supply L21 error
12884	0	0	0	0	1	Power supply L31 error
12885	1	0	—	—	—	Power supply L row abnormal detected
	1	—	—	0	—	Power supply L row abnormal detected
	—	1	0	—	—	Power supply L row abnormal detected
	—	—	—	1	0	Power supply L row abnormal detected
						Power supply L row abnormal detected
12886	*					Power supply L system error

<Bit indication>

1: Error

0: Normal

* When the error combination is other than from 12880 to 12885.

TR6H1321.EPS

3.2 Erasure Unit

■ Overview

The erasure unit provides idle illumination control, IP erasure control, and fan control.

Feature: Erasure unit initialization is effected after verifying that the machine is emptied of IPs.

● Idle illumination control

To obtain an adequate lamp light intensity for IP erasure after RU power ON, lamp (LAMP1-LAMP3) illumination and FAN3 operation are controlled so as to maintain a constant temperature inside the erasure unit.

● IP erasure control

To effect IP erasure, the erasure unit pass time is controlled in accordance with the dose received by a processed IP.

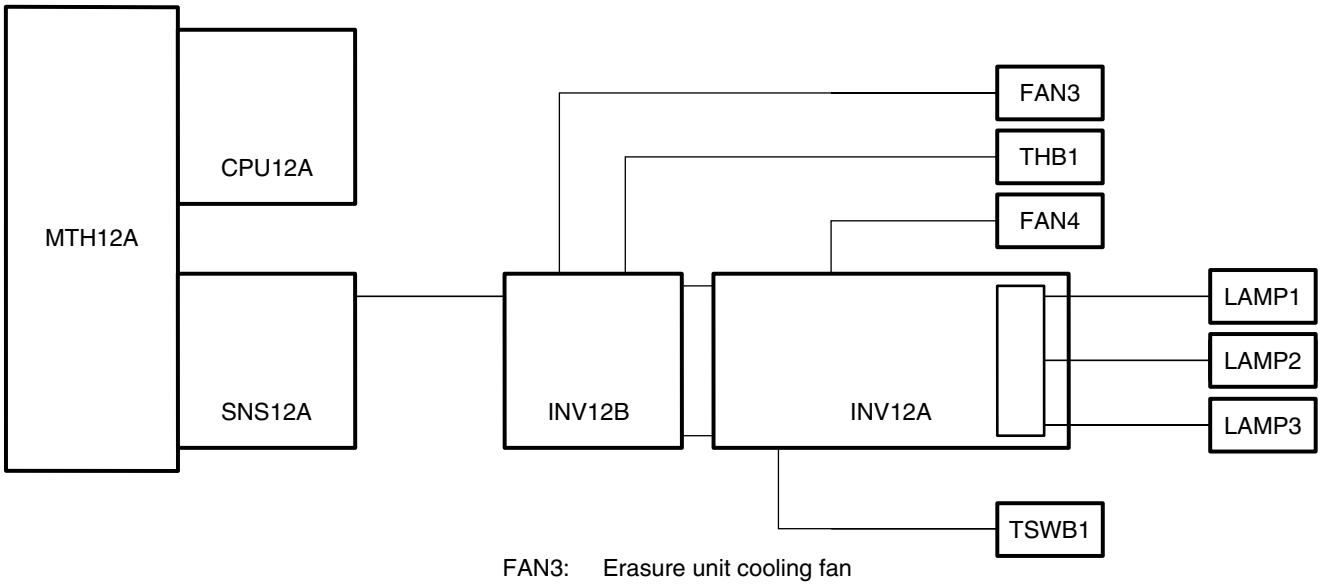
● Fan control

Control is exercised so as to operate a fan when the internal temperature of the erasure unit is high.

● Temperature adjustment control

- The heat generated during lamp (LAMP1-LAMP3) illumination is detected by the temperature thermistor (THB1) and used to exercise FAN3 operation and lamp illumination control.
- While the machine is idle and processing no IP, control is exercised to automatically illuminate the lamps for temperature adjustment purposes.
- Before the lamps are illuminated, they are subjected to preheating.

■ Components



FAN3: Erasure unit cooling fan
FAN4: Inverter cooling fan
TSWB1: Thermal switch
THB1: Temperature thermistor

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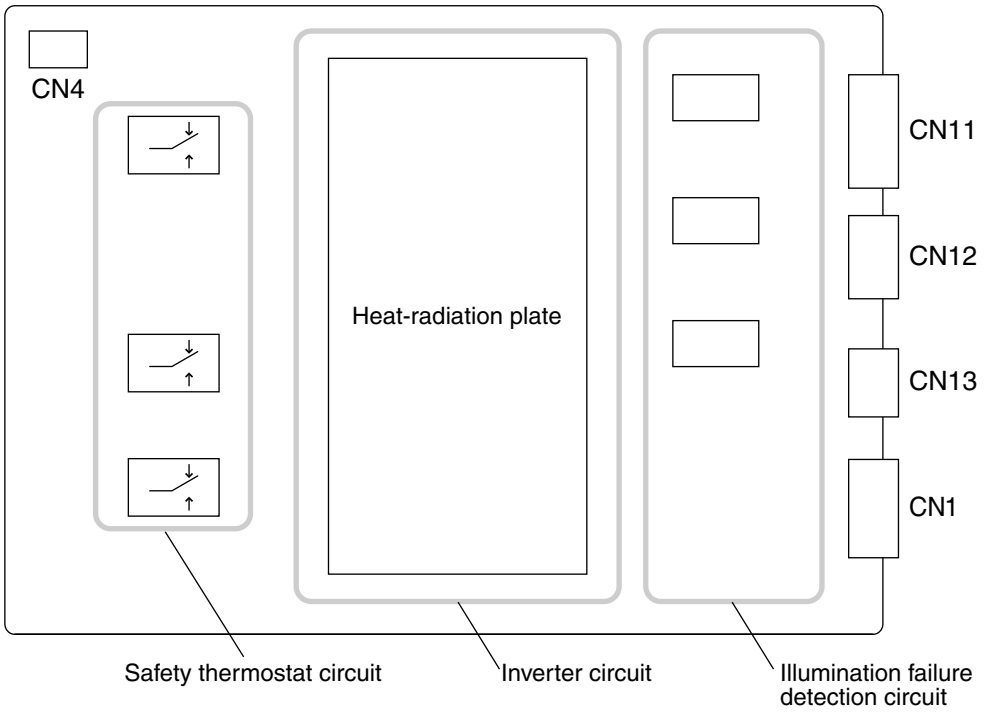
■ Function descriptions

● INV12A board: This is a driver PC board, which consists of a safety thermostat circuit, inverter circuit, and illumination failure detection circuit.

INV12A board



Safety thermostat circuit:

Upon receipt of the OFF signal from the safety thermostat (TSWB1), this circuit operates a relay to directly shut off the 24 V supply.

Illumination failure detection circuit:

Each lamp is furnished with a detection circuit, which achieves illumination failure detection in accordance with the current.

Inverter circuit:

Each lamp is provided with a lamp voltage output circuit.

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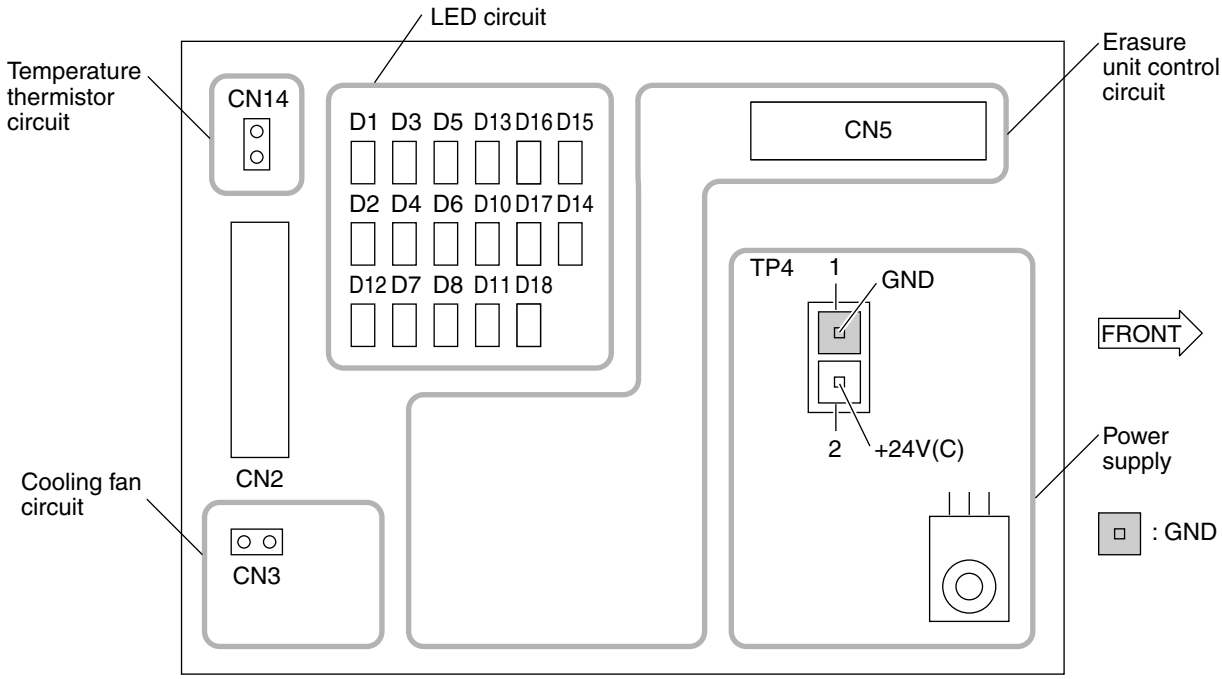
● INV12B board: This is a control PC board, which consists of a temperature thermistor circuit, LED circuit, erasure unit control circuit, power supply, and cooling fan circuit.

INV12B board



Test Pin TP4	Voltage	Reference Voltage
TP4 1-2	+24V	Should be between +23.5 and 25.0.

- Temperature thermistor circuit: Processes temperature thermistor (THB1) signals.
- LED circuit: Displays the states of various signals fed from the erasure unit.
- Erasure unit control circuit: Communicates with the SNS12A board and controls the erasure unit.
- Power supply: Functions as a 24 V/24 V-to-5 V regulator circuit.
- Cooling fan circuit: Processes fan operation signals.

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■ Erasure unit internal status

The erasure unit's internal status is monitored and determined in accordance with various signal combinations.

Board LED				Status in the Erasure Unit
TH	HERR	FA	LT	
0	0	0	1	Thermistor failure
1	0	0	1	Excessively high temperature
1	1	0	1	Fan operation
1	1	1	1	Ready for use
1	1	1	0	Request for idle illumination ON
0	1	1	0	Thermistor failure

LED indication 1 - ON, 0 - OFF

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LED	Silk Indication	Meaning	LED Status	
			OFF	ON
D1	1PRE	Pre-heating signal issued to LAMP1.	GOOD	NG
D2	1ON	ON signal issued to LAMP1.	GOOD	NG
D12	1O	LAMP 1 is ON.	GOOD	NG
D3	2PRE	Pre-heating signal issued to LAMP2.	GOOD	NG
D4	2ON	ON signal issued to LAMP2.	GOOD	NG
D7	2O	LAMP 2 is ON.	GOOD	NG
D5	3PRE	Pre-heating signal issued to LAMP3.	GOOD	NG
D6	3ON	ON signal issued to LAMP3.	GOOD	NG
D8	3O	LAMP 3 is ON.	GOOD	NG
D10	FAN	ON signal notified from the INV12A board to the SNS12A board.	OFF	ON
D11	HERR	The INV12B board detected high temperature.	Detected	Not detected
D13	LT	The INV12B board detected low temperature.	Detected	Not detected
D16	FUS1	LAMP1 fuse on the INV12A board is blown.	NG	GOOD
D17	FUS2	LAMP2 fuse on the INV12A board is blown.	NG	GOOD
D18	FUS3	LAMP3 fuse on the INV12A board is blown.	NG	GOOD
D15	TH	Temperature thermistor (THB1) broken.	NG	GOOD
D14	VCC	5V output on the INV12A board.	GOOD	NG

TR6H1322.EPS

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4. Descriptions of Components and Their Operations

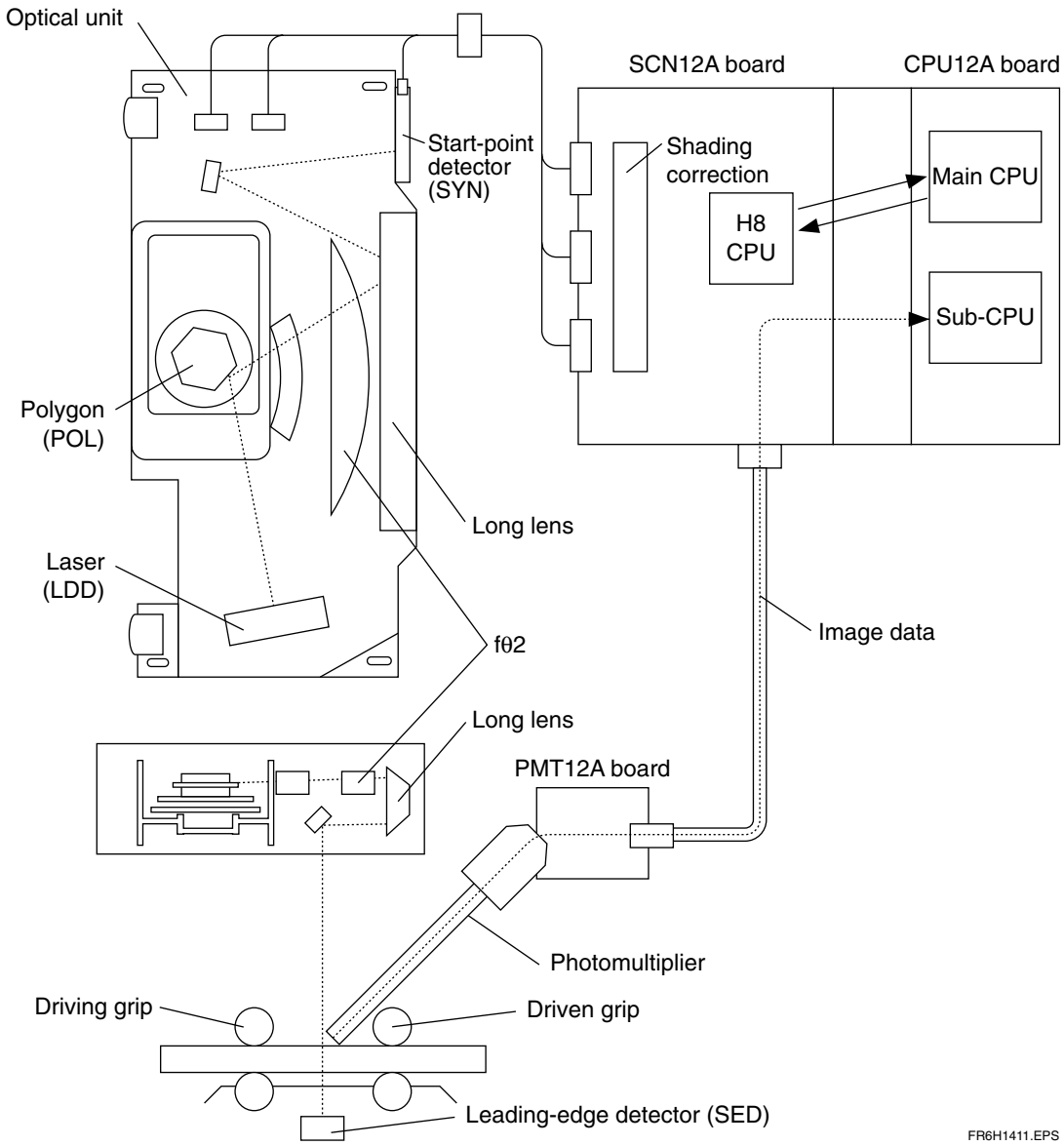
4.1 Descriptions of Scanner Unit and Its Operations

CAUTIONS

- *When servicing a PC board, be sure to wear a wrist band to ground your body. If you do not ground your body, the buildup of static electricity on your body may damage electronic components on the PC board.*
- *Do not uncover the optical unit.*
- *Never remove screws painted red.*
- *When returning a replaced optical unit for repairs, be sure to use the same packing materials that were used for initial shipment. Otherwise, the returned unit cannot be repaired.*

4.1.1 Scanner Unit

■ Components



4.1.2 Descriptions of Scanner Operations

■ I/O components

● Optical unit

This unit consists of the laser (LDD: 50 mW), polygon (POL), start-point detector (SYN), f θ lens, and long lens.

● Sub-scanner unit

This unit consists of the driven grip, driving grip, photomultiplier (PMT), and leading-edge detector (SED).

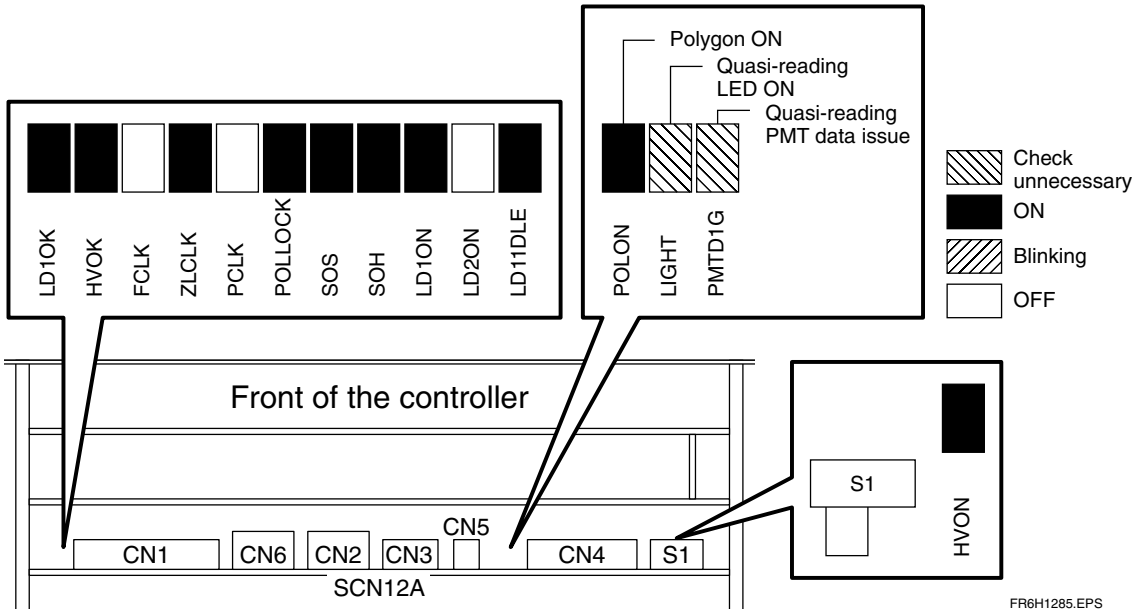
■ Descriptions of operations

The H8 CPU on the SCN12A board controls the optical unit and photomultiplier and communicates with the main CPU on the CPU12A board.

● Features

- The control signal status of each I/O is indicated by the LEDs on the SCN12A board.
- The scanner error code is formulated by combining an I/O control signal and PC board reference signal.

  It is structured so as to facilitate problem cause identification.
- The polygon data, shading correction data, sensitivity data, and format data are stored in the backup memory on the CPU12A board. They are fed to the SCN12A board for use in operations.



● Meanings of SCN12A board LEDs

LED	Meaning	LED ON/Blinking	LED OFF
LD1 OK	OK signal (laser power 50% or more) from the laser (LDD)	GOOD	NG
HV OK	High-voltage power supply OK signal from the photomultiplier (PMT)	GOOD	NG
FCLK,PCLCK	Reference signal issued by the SCN12A board	-	-
ZLCLK	H8 CPU operation status signal	GOOD (blinking)	NG
POL LOCK	OK signal from the polygon (POL)	GOOD	NG
SOS	Detection signal from the start-point detector (SYN)	Detected	Not detected
SOH	Detection signal from the leading-edge detector (SED)	Detected	Not detected
LD1 ON	ON signal from the SCN12A board to the laser (LDD)	ON	OFF
LD2 ON	Not used	-	-
LD1 IDLE	Control signal from the SCN12A board to the laser (LDD) ON: Output generation is in progress. OFF: No output is being generated.	ON	OFF
POL ON	ON signal from the SCN12A board to the polygon (POL)	ON	OFF
LIGHT	Quasi-data output signal with the PMT12A board LED illuminated	ON	OFF
PMT D1G	Quasi-data output signal generated by the LOG amplifier on the PMT12A board	ON	OFF
HV ON	High-voltage switch status signal ON: The ON setting is selected by both the software and the hardware. OFF: The OFF setting is selected by either the software or the hardware.	ON	OFF

TR6H1101.EPS

4.1.3 RU Image Data Flow

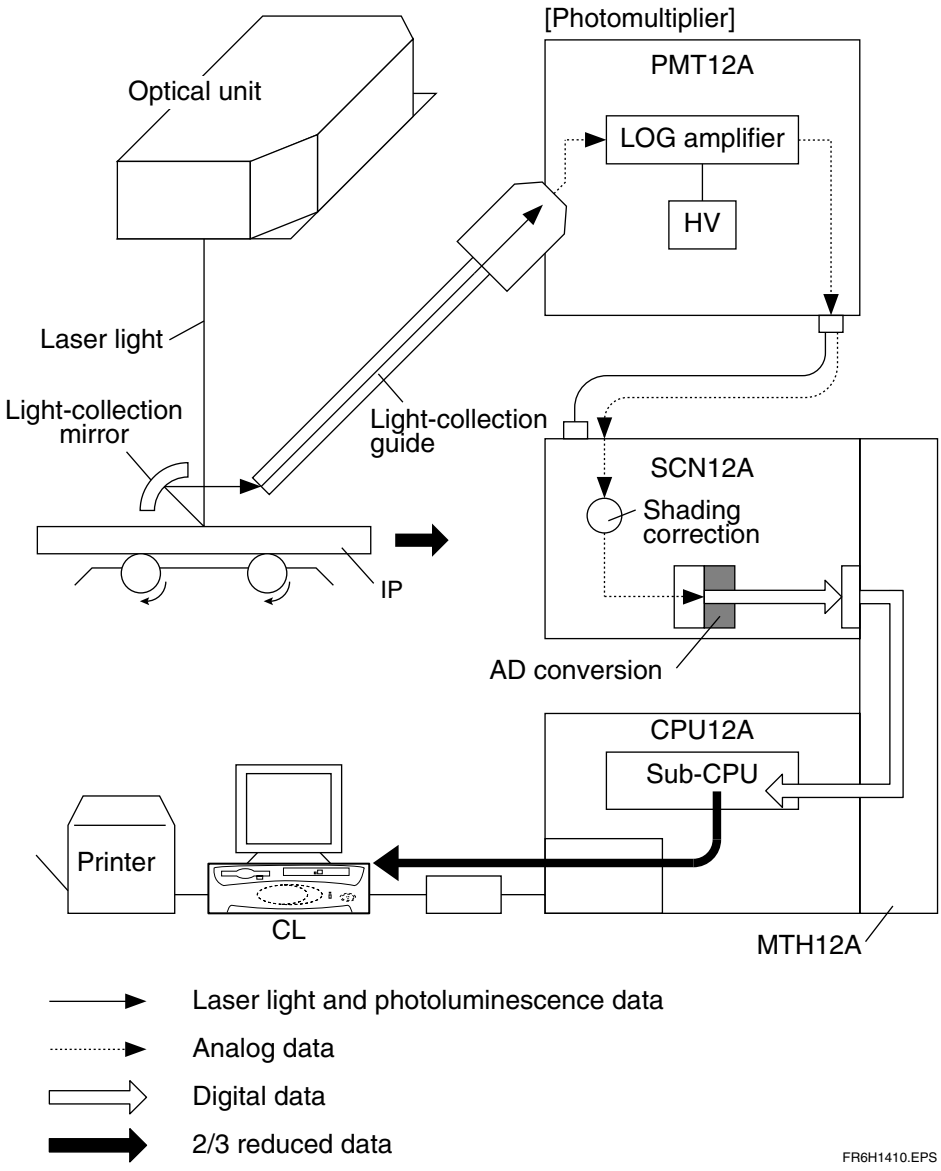
(1) Photoluminescence data is generated when the laser light emitted from the optical unit falls on an IP. It is read by the photomultiplier via the light-collection guide.

(2) The PMT12A board (photomultiplier) sends the data, in analog form, to the SCN12A board.

(3) The analog data thus sent is subjected to shading correction and other processes on the SCN12A board, and then converted to its digital data equivalent (A/D conversion).

(4) The SCN12A board sends the data, in digital data form, to the CPU12A board via the MTH12A board.

(5) The sub-CPU on the CPU12A board subjects the data to 2/3 line reduction and then transmits it to the CL via the network.



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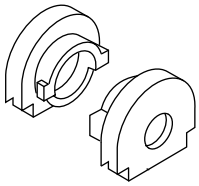
4.2 Descriptions of Mechanical Components and Their Operations

■ RU common parts

● E-ringless housings

The employed housings can be secured to side plates without E-rings.



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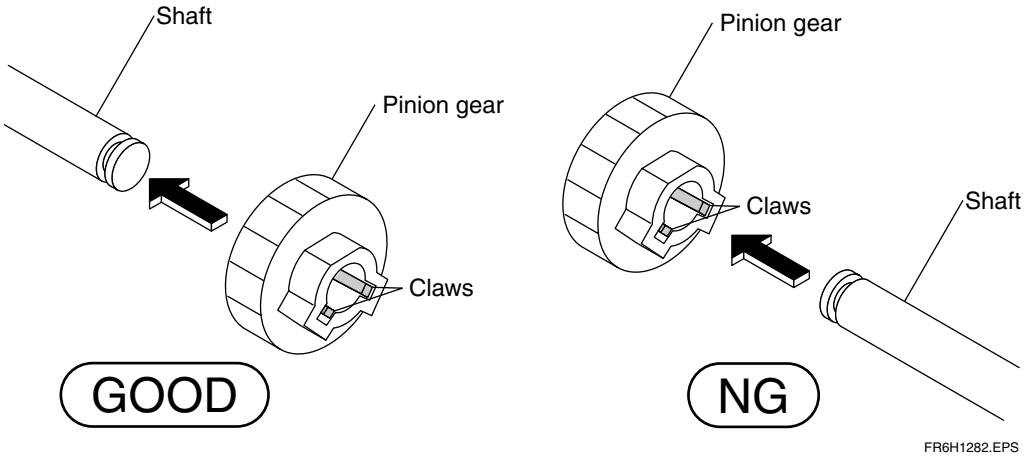
● Snap-fit pinion gears

The employed pinion gears can be installed and removed without using retaining members or tools.

CAUTION

When installing the pinion gear over the shaft, ensure that it is properly oriented. If you install it over the shaft while it is reversed, its claws may become damaged.



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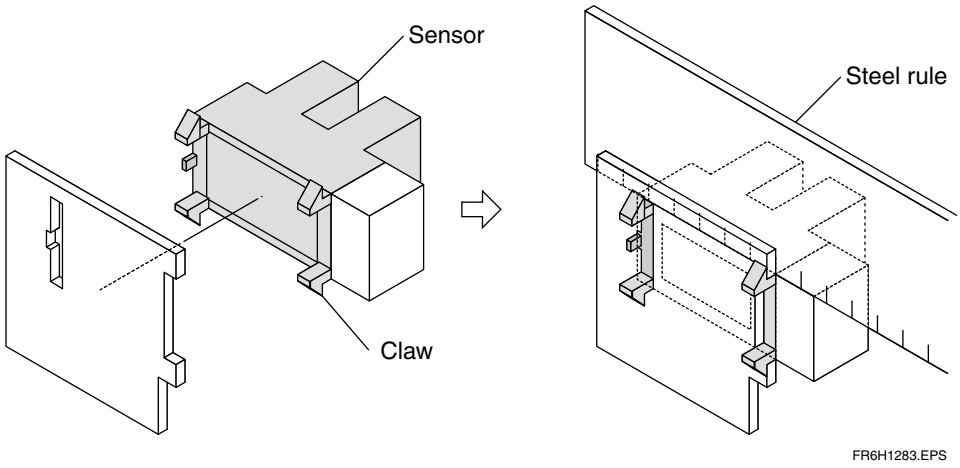
● Photosensors

In marked contrast to the previously used screw-on type, the currently employed photosensors are to be claw-locked (for displacement prevention).

CAUTION

When removing or installing the photosensor, use a steel rule or the like and exercise care not to damage the sensor claws.

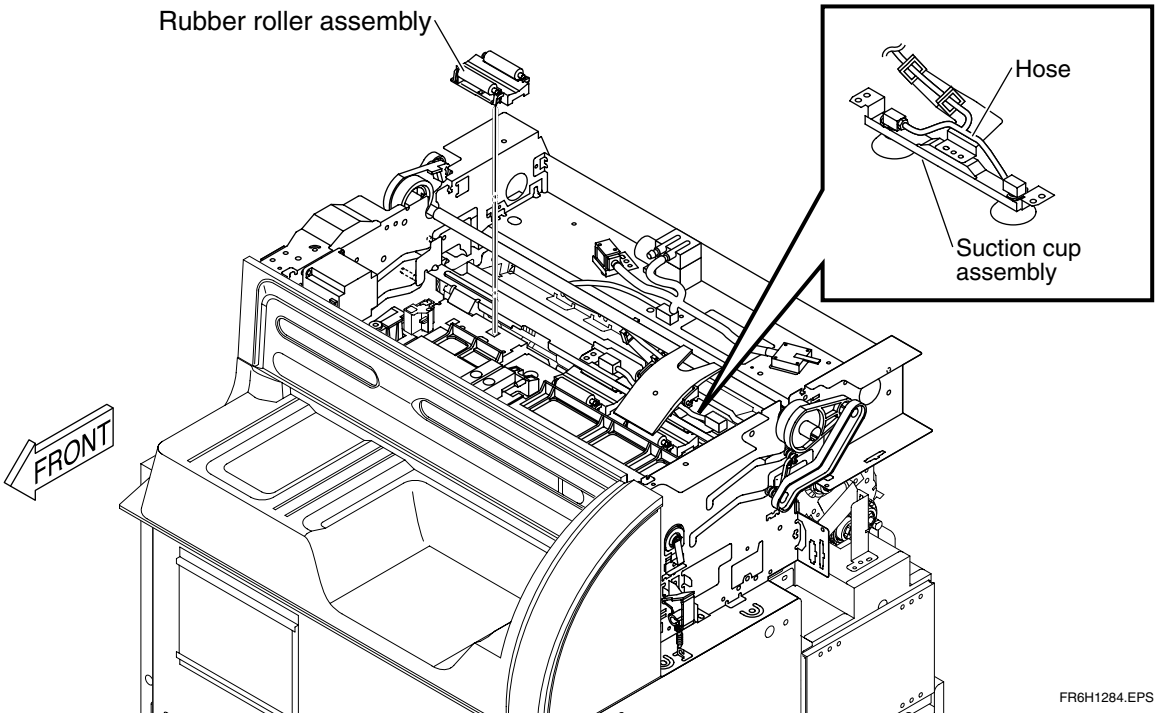


4.2.1 Cassette Set Unit

The IP inserted into the cassette is suctioned by the suction cups and transported to the feed roller in the erasure conveyor unit.

The features of the RU cassette setting unit are summarized below:

- The suction cups have enhanced durability and need no replacement.
- The hose interconnecting the suction cups and suction pump is constructed of one piece without joints. It differs from the previous type, which uses a branch pipe.
- Switching between the inch and metric settings can be performed by repositioning the guides and changing the associated CPU board DIP switch settings.
- A rubber roller assembly is used to prevent the IP image read surface from being damaged.



■ Suction cup home position

The suction cup home position sensor (SA4) detects the suction cup home position. When the suction cup assembly is in the home position, the spur gear claw closes the suction cup home position sensor (SA4) by blocking its light path.

■ IP feed suction

The suction cup drive motor (MA1) rotates to move the suction arm toward the cassette cover. The moment the suction cup assembly reaches the IP suction position, the suction pump (PA1) operates to suction the IP. If the suction sensor (SA5) does not close within a period of 1 second in this instance, a suction failure occurs.

■ IP feed leak

After the suction cup assembly is moved to the feed roller in the erasure conveyor unit, the leak valve (SVA1) operates to separate the suctioned IP from the suction cup assembly.

To verify the subsequent IP feed operation, the cassette inlet IP detection sensor (SB1) detects the IP leading edge.

■ IP load suction

When the IP is loaded from the erasure conveyor unit into the cassette, the suction pump (PA1) operates to suction the IP trailing edge.

In this instance, the suction cup assembly is in the home position.

■ IP load leak

The suction cup drive motor (MA1) rotates to move the suction arm toward the cassette cover, thereby loading the IP into the cassette. Once the IP loading is completed, the leak valve (SVA1) operates to release the suction of the suction cup.

■ Cassette ejection

After the IP suction is released, the solenoid (SOLA1) operates to release the cassette hold pin that secures the cassette in place.

At this time, the extrusion clutch (CLA1) operates so that the driving force of the IP removal arm is transmitted to the rubber roller. Thus, the moment the IP removal arm is moved to its home position, the rubber roller rotates, so that the cassette is ejected.

Once the cassette ejection is completed, the extrusion clutch (CLA1) turns off, and the processing status lamp goes off, while the cassette removal lamp lights up.

4.2.2 Erasure Conveyor Unit

The IP transported from the cassette setting unit to the feed roller is forwarded to the side-positioning conveyor. In this instance, the barcode is read and the brush roller removes dust from the IP surface.

Further, the read image is erased from the IP and the IP is transported to the cassette setting unit.

The features of the RU erasure conveyor unit are summarized below:

- Cleaning rollers are incorporated in the erasure conveyor unit to remove dust from IPs.
- The erasure conveyor unit has a barcode reader.
- Two functions are selectable for IP image erasure: primary erasure (IP image erasure after the completion of an image read operation) and secondary erasure (residual image/RI spot erasure from IPs left unused for prolonged periods of time).

■ IP feed conveyance (IP length measurement and barcode reading)

While the IP transported from the cassette setting unit to the feed roller is forwarded to the side-positioning conveyor by the conveyance motor (MB1), it is detected by the cassette inlet IP detection sensor (SB1). The length of the transported IP is then measured (by counting the time required for the IP to pass through the SB1 sensor) to determine the IP size. Further, the barcode reader operates to read the barcode information the moment the IP length measurement sequence starts.

■ IP load conveyance (image erasure)

After the completion of an image read process, the IP is transported by the conveyance motor (MB1) to let the erasure lamps delete image data.

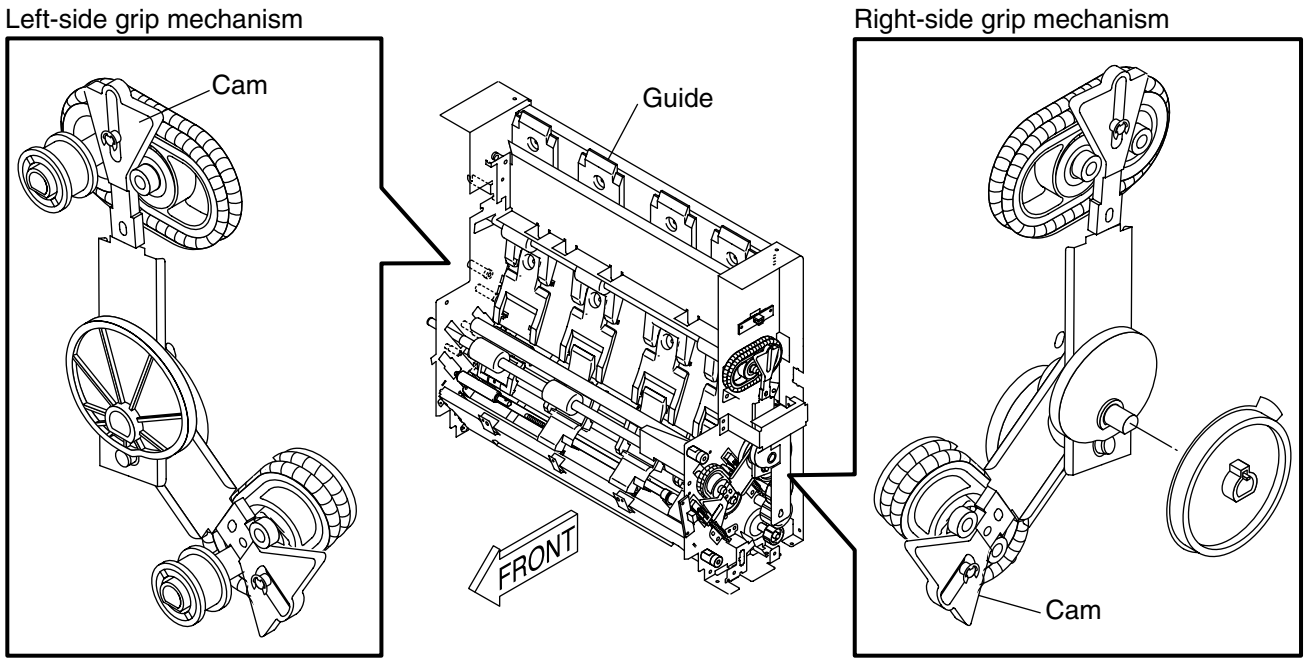
4.2.3 Side-positioning Conveyor

The IP transported from the erasure conveyor unit to the side-positioning conveyor is side-positioned and forwarded to the sub-scanner unit. Note that a side-positioning operation is performed two times.

The features of the RU side-positioning conveyor are summarized below:

- On the preceding model, the side-positioning conveyor incorporates an IP stopper mechanism and side-positioning claw assembly to correct any IP skew and side-position the transported IP. Within the RU, however, the IP stopper mechanism

  (IP skew correction function) and side-positioning claw assembly (IP side-positioning function) are separately incorporated in the sub-scanner unit and side-positioning conveyor.
- The preceding model uses a wire for grip roller release. However, the RU uses a plastic cam instead.
- The preceding model furnishes the IP conveyance path with a shock absorber. However, the RU uses plastic guides.



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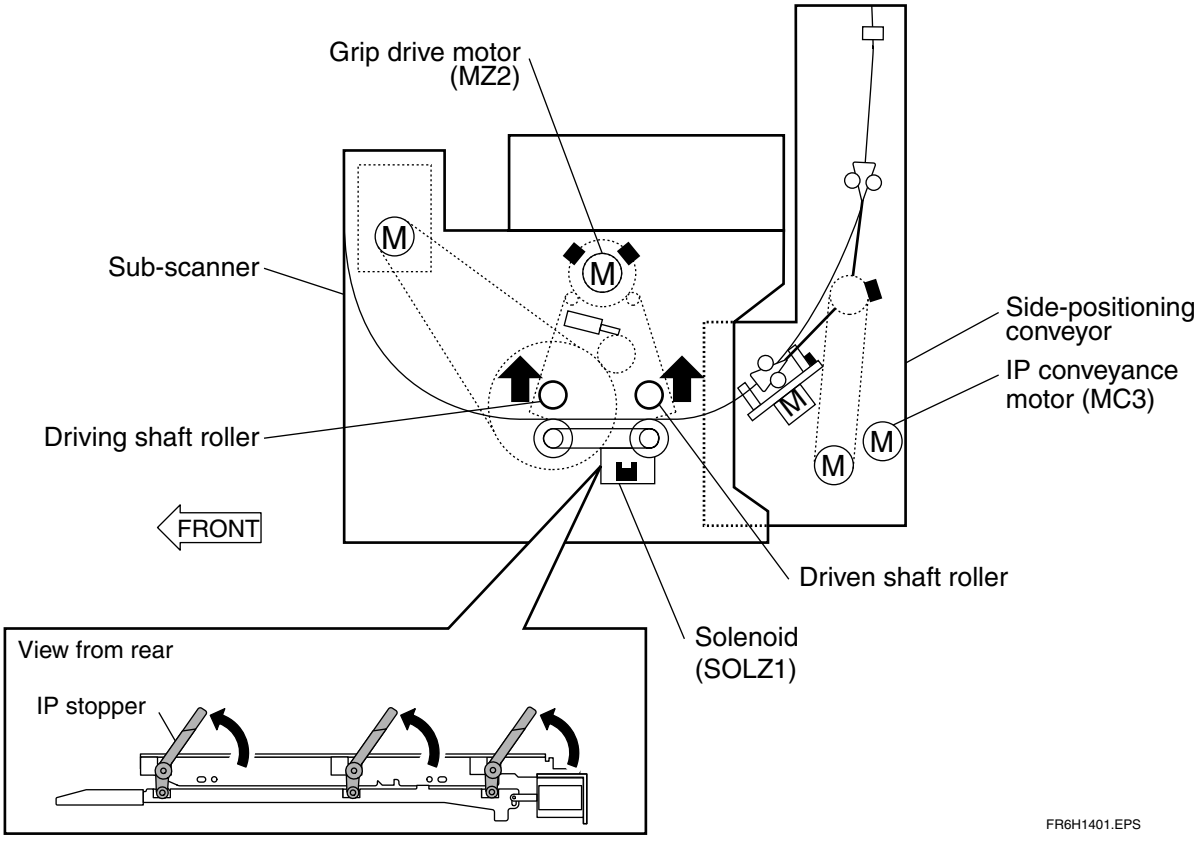
■ IP feed conveyance

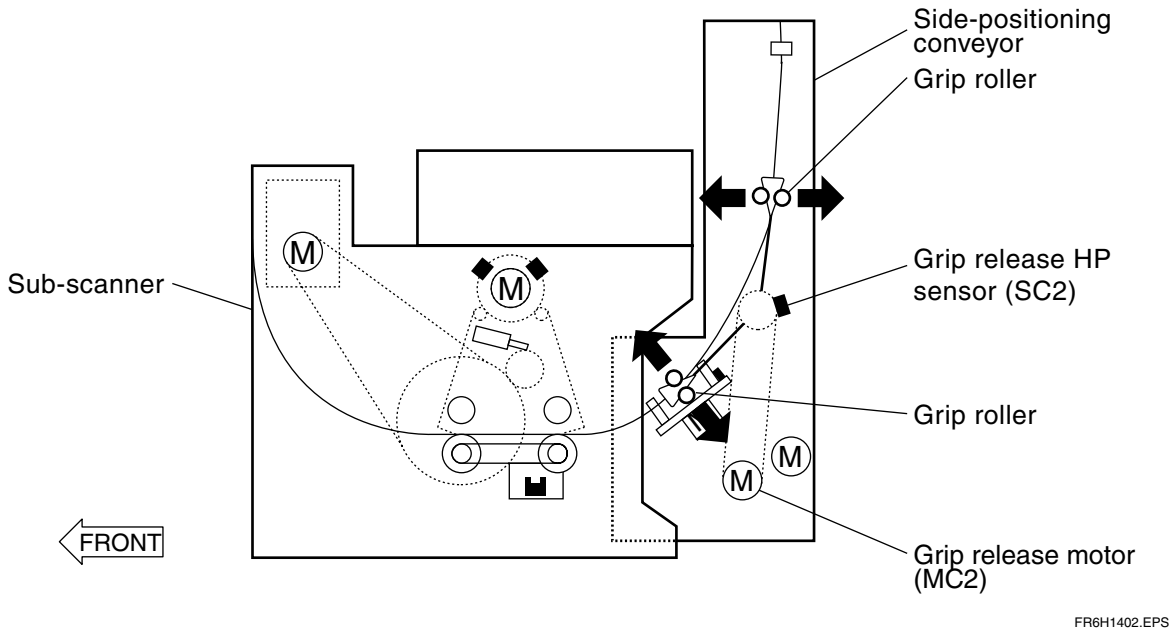
The IP conveyance motor (MC3) operates to transport the IP to the IP stopper section in the sub-scanner unit. In this instance, the solenoid (SOLZ1) operates to raise the IP stoppers.

Further, the driven and driving shaft roller grips in the sub-scanner unit are released.



■ Grip roller release

When the transported IP is detected by the grip release home position sensor (SC2), the grip release motor (MC2) operates to release the grip roller.

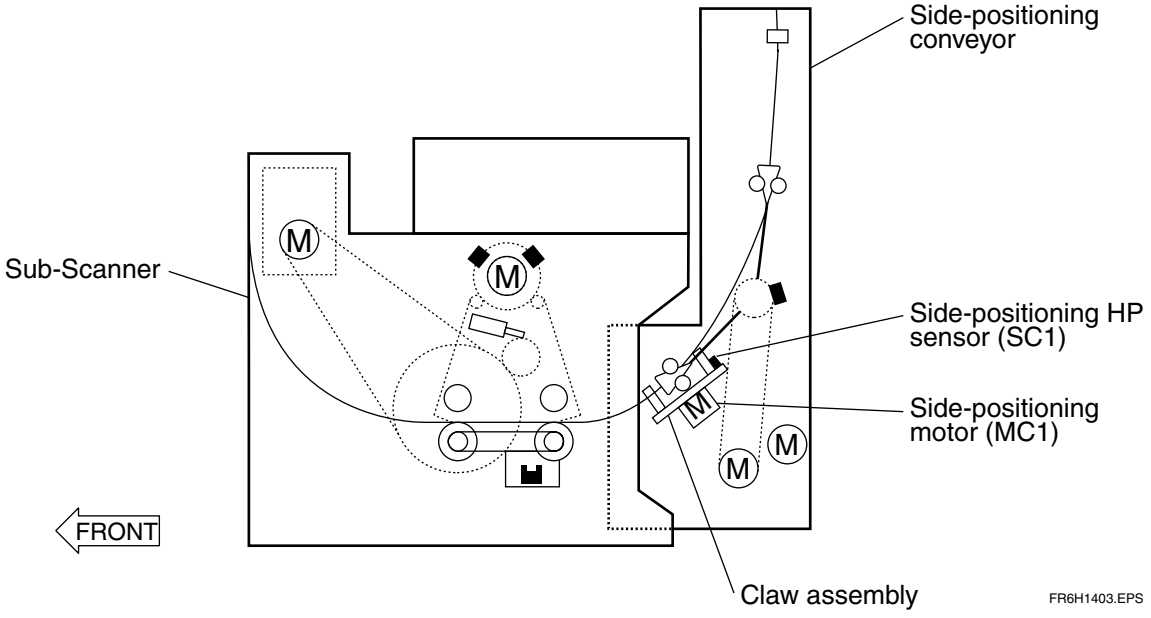


■ Side-positioning operation

When the side-positioning sensor (SC1) detects that the claw assembly is in its home position, the side-positioning motor (MC1) drives to perform side-positioning operation twice.

The side-positioning operation causes the edge of the IP to align closely to the side guide of the side-positioning conveyor, thereby determining the orientation and position of the IP.

After the side-positioning operation is completed, the claw assembly moves to its home position and the IP is conveyed to the scanner unit.

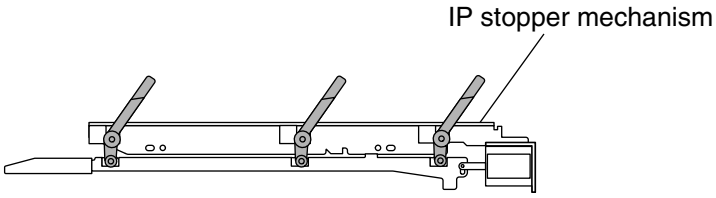


4.2.4 Subscanning Unit

When the IP is transported from the side-positioning conveyor, the subscanning unit reads the image recorded on the IP. The subscanning unit also transmits image data to the CL as soon as the image read process starts.

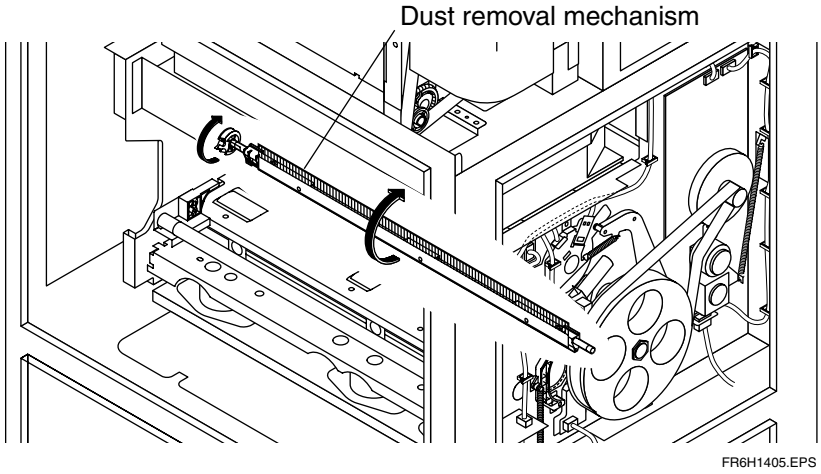
The features of the RU subscanning unit are summarized below:

- The IP stopper mechanism for side-positioning is mounted in front of the light-collection mirror assembly.



- The dust removal mechanism is incorporated.

  Dust removal is performed after RU power ON (during initialization) to clean the incidence surface of the light-collection guide. It can also be initiated at any time by issuing a command in the user utility mode.

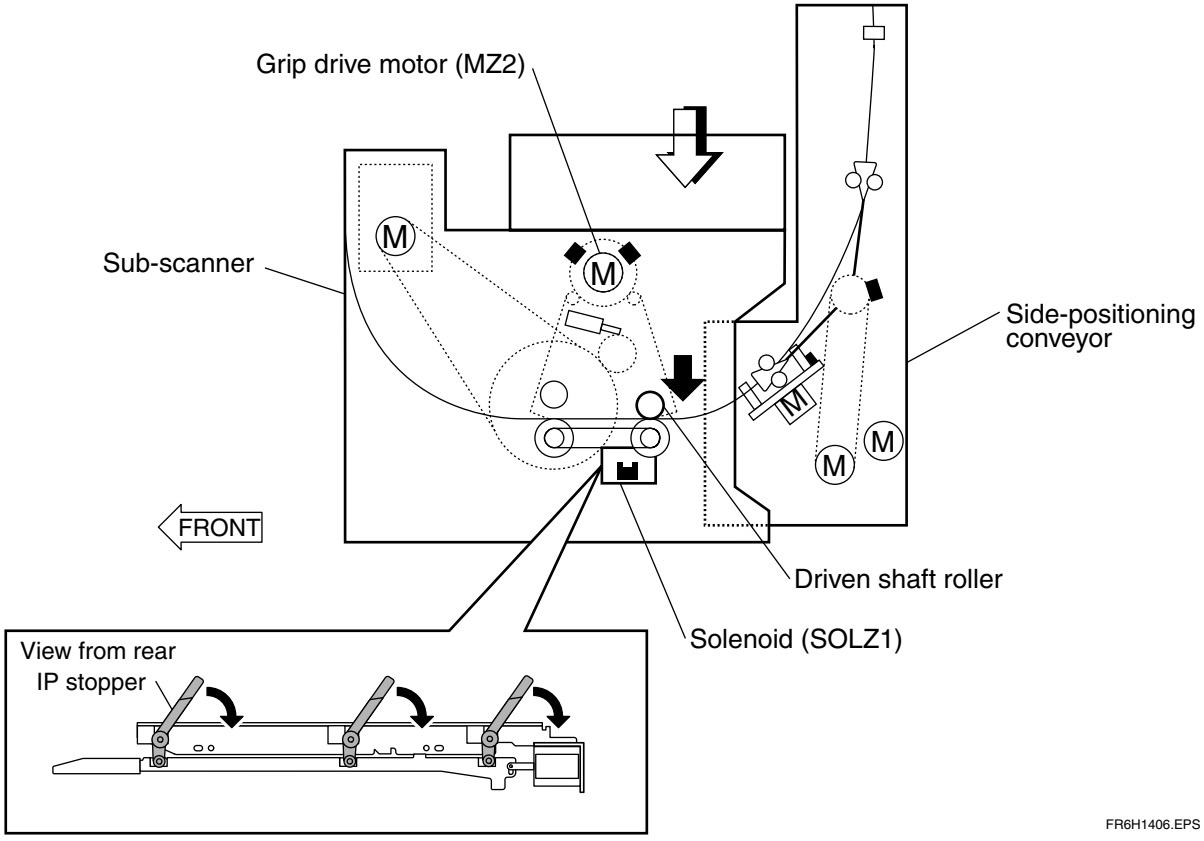


■ Driving shaft roller/driven shaft roller

When the IP is transported to the IP stopper section, the image read process is started by operating the sub-scanner motor (MZ1) to forward the IP with the aid of driving and driven shaft rollers.

■ Driven shaft grip

Once the side-positioning operation is completed, the solenoid (SOLZ1) operates to release the IP stoppers. At this time, the grip drive motor (MZ2) operates so that the driven shaft roller grips the IP, which is conveyed toward the reading position.

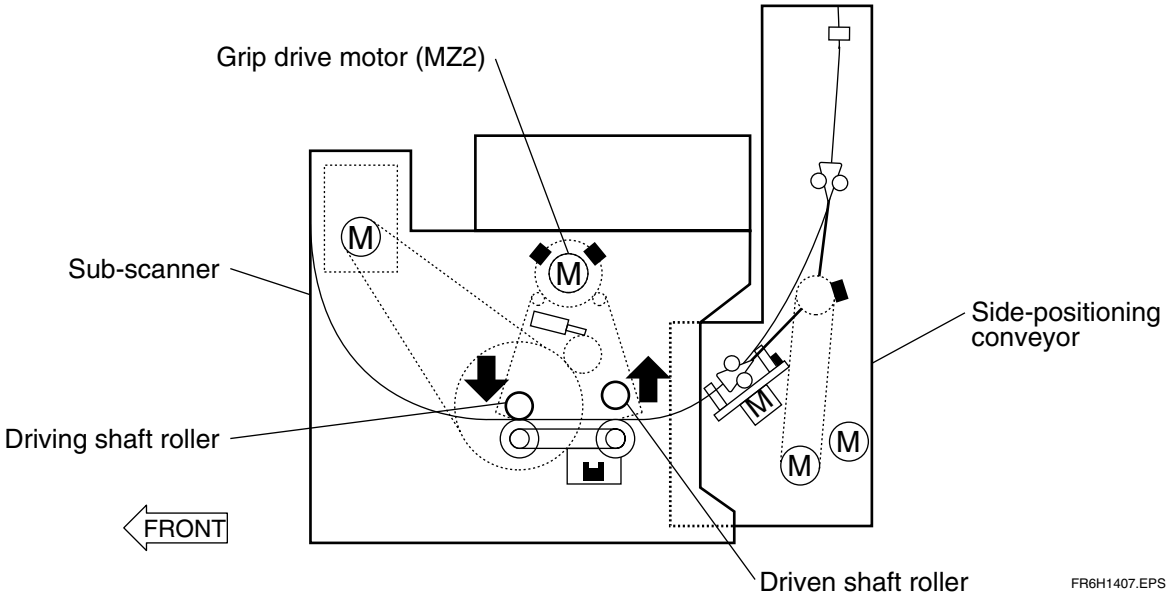


■ Driving shaft grip

Once the side-positioning operation is completed, the IP stoppers are released, and the IP is gripped by the rotating driven shaft roller to start its conveyance.

When the IP leading edge sensor (SZ1) transitions to CLOSE due to the IP conveyed, IP image reading is initiated.

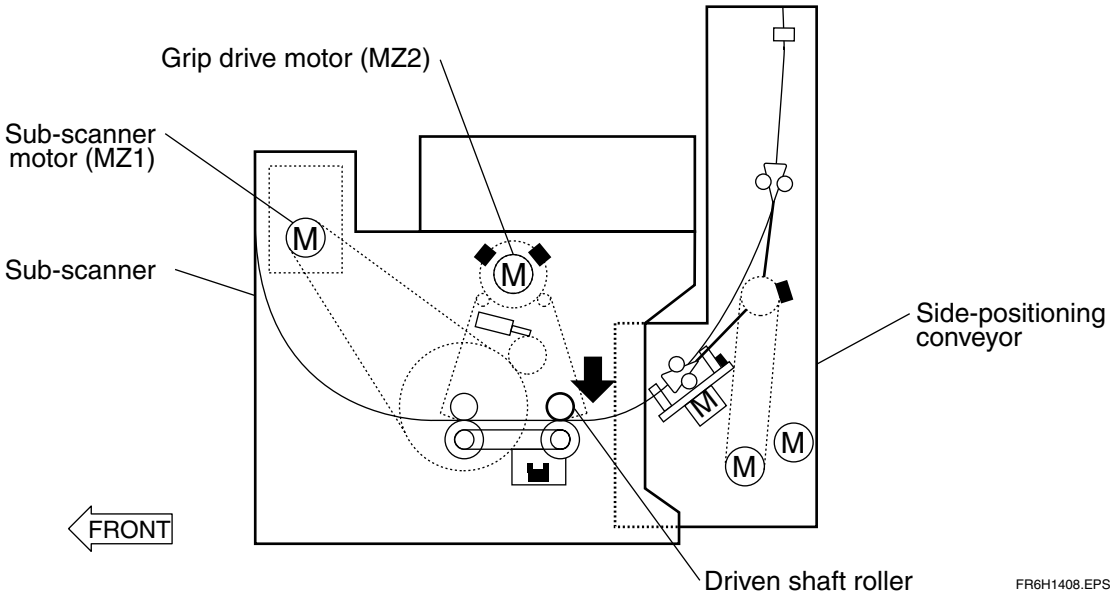
When the driving shaft roller grips the IP, the grip drive motor (MZ2) operates, thereby releasing the grip of the driven shaft roller.



■ IP load conveyance

After the completion of the image read process, the grip drive motor (MZ2) operates to grip the released driven shaft roller.

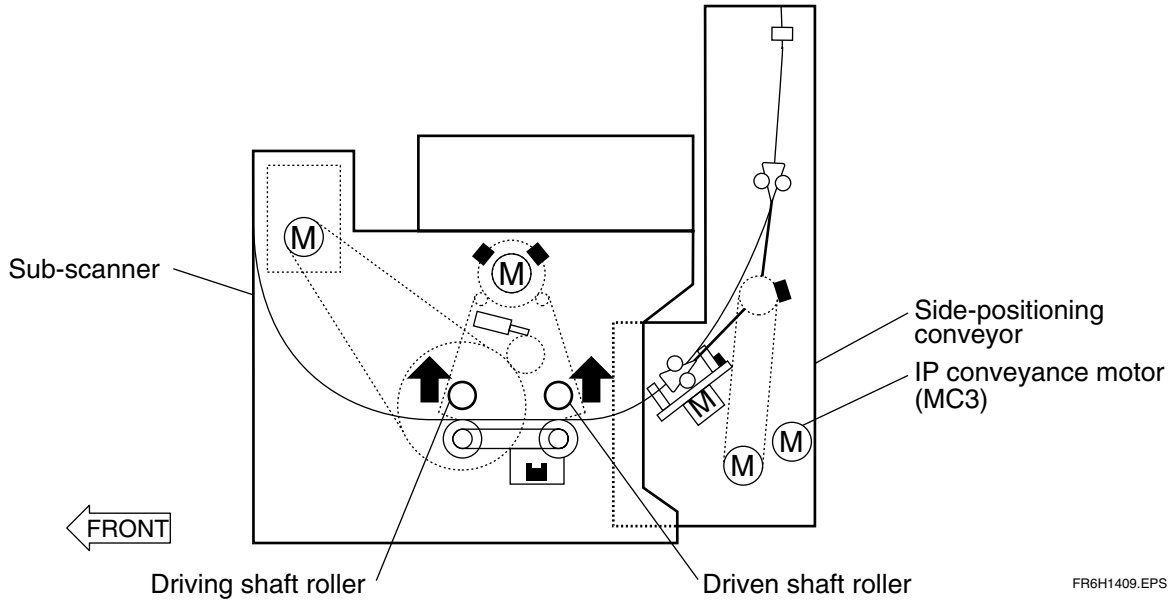
The moment the driven shaft roller is gripped, the sub-scanner motor (MZ1) operates to transport the IP to the side-positioning conveyor.



■ Driving/driven shaft grip release

When the IP is transported to the side-positioning conveyor, the driving and driven shaft roller grips are released.

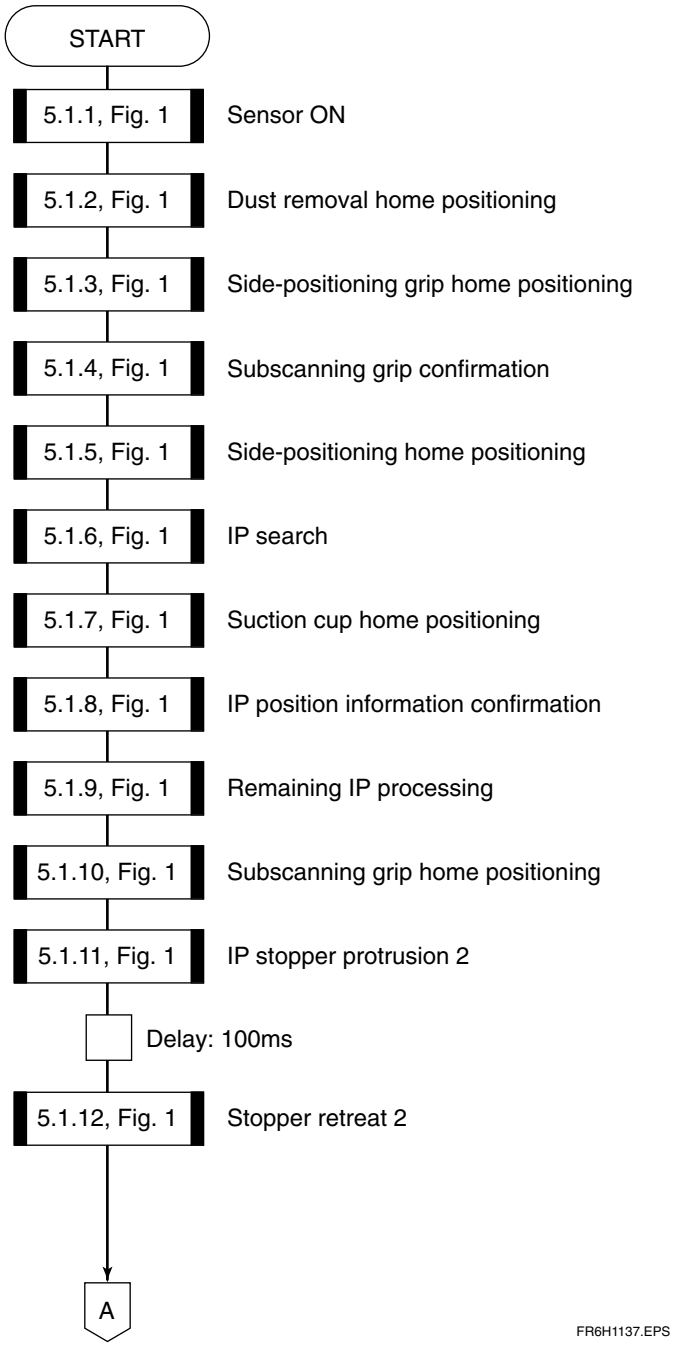
Further, when the driving and driven shaft roller grips are released, the IP conveyance motor (MC3) in the side-positioning conveyor operates to transport the IP.

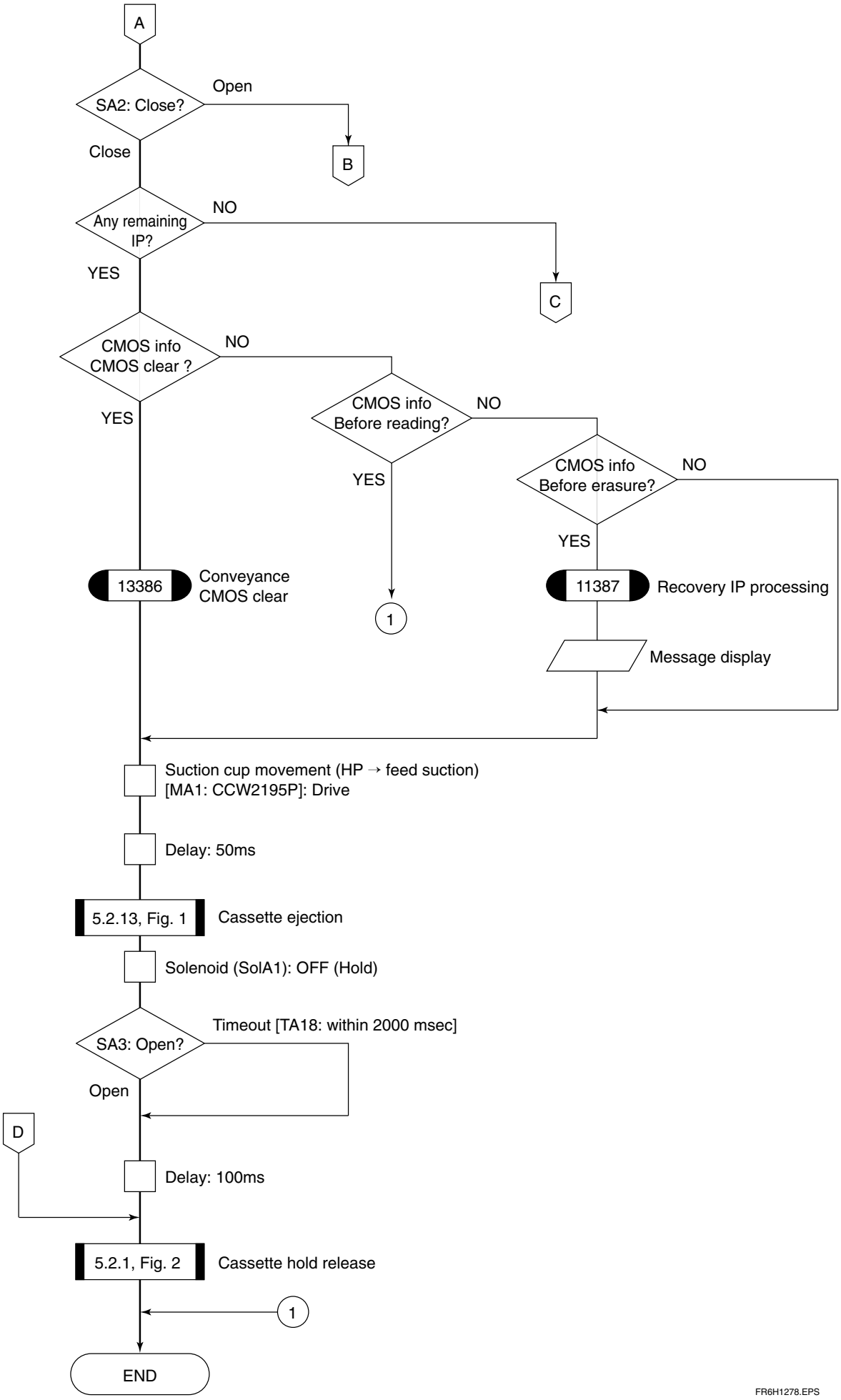


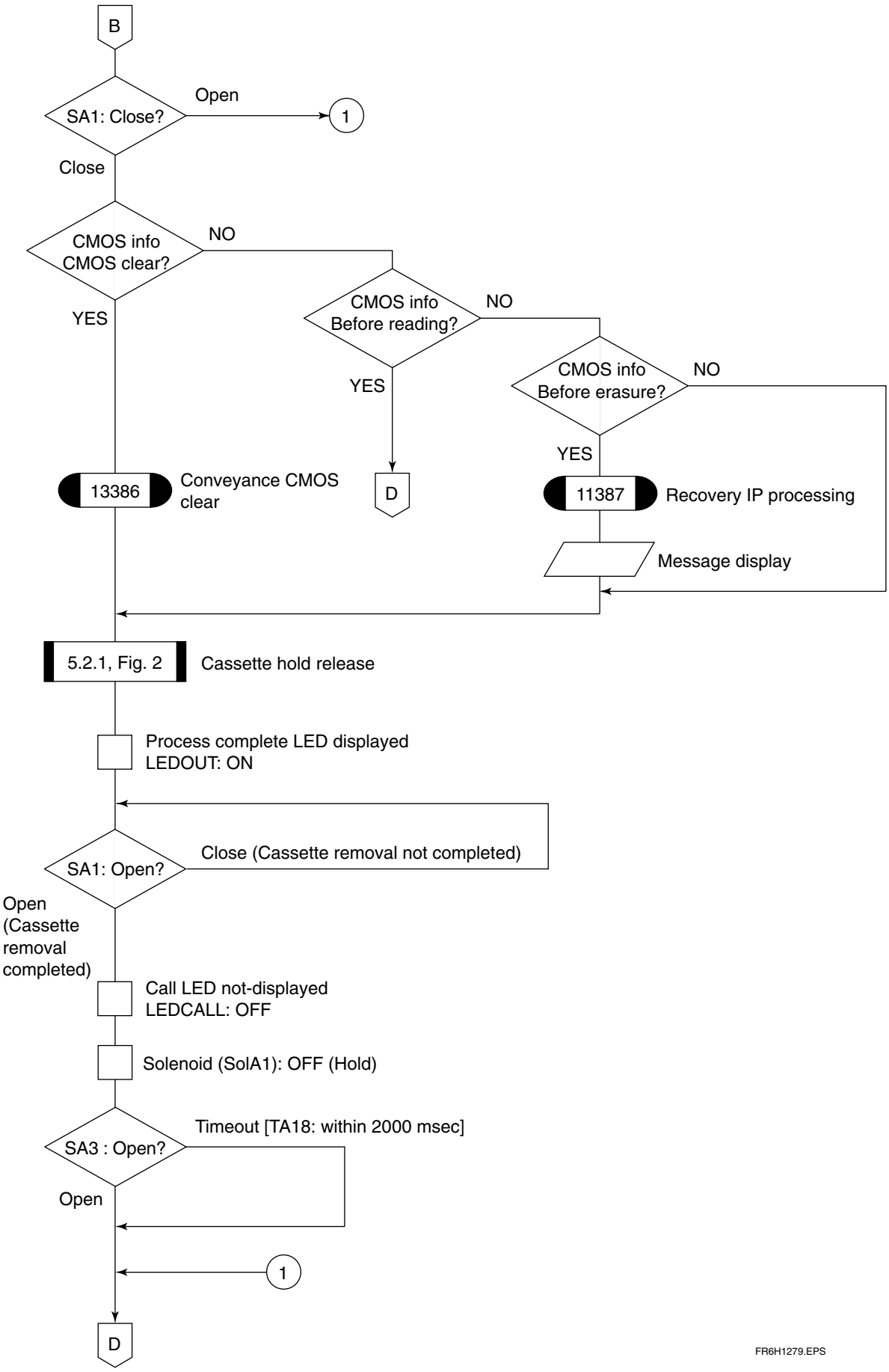
5. Mechanical Control Flows

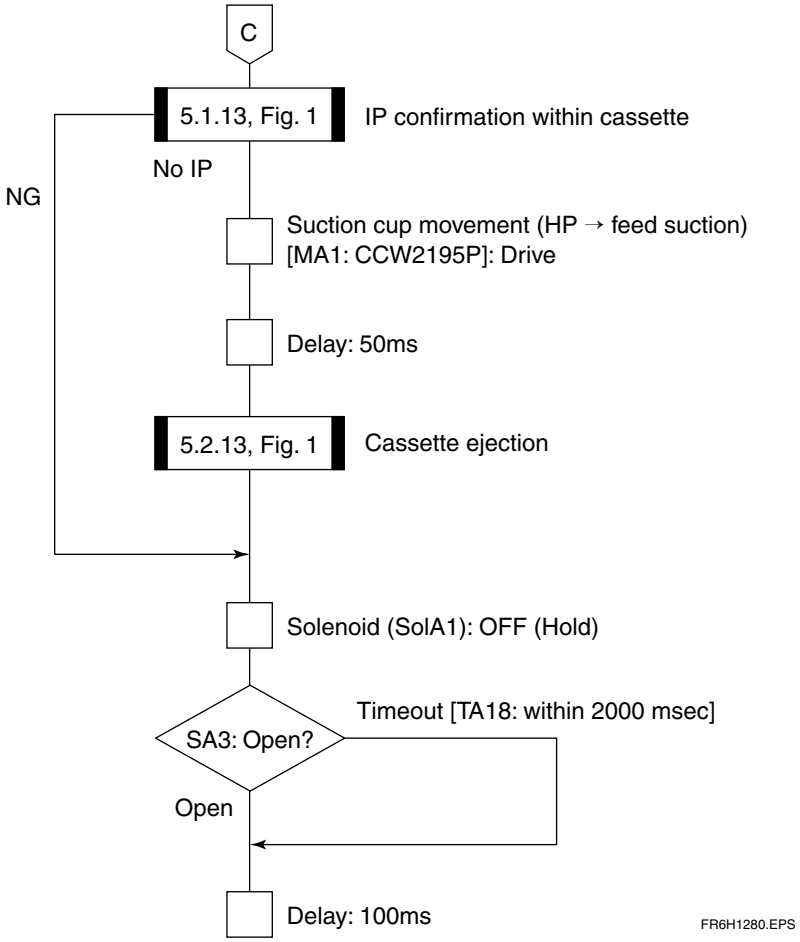
5.1 Initialization Process Flow

<Fig. 1 Overall Summary Flow>



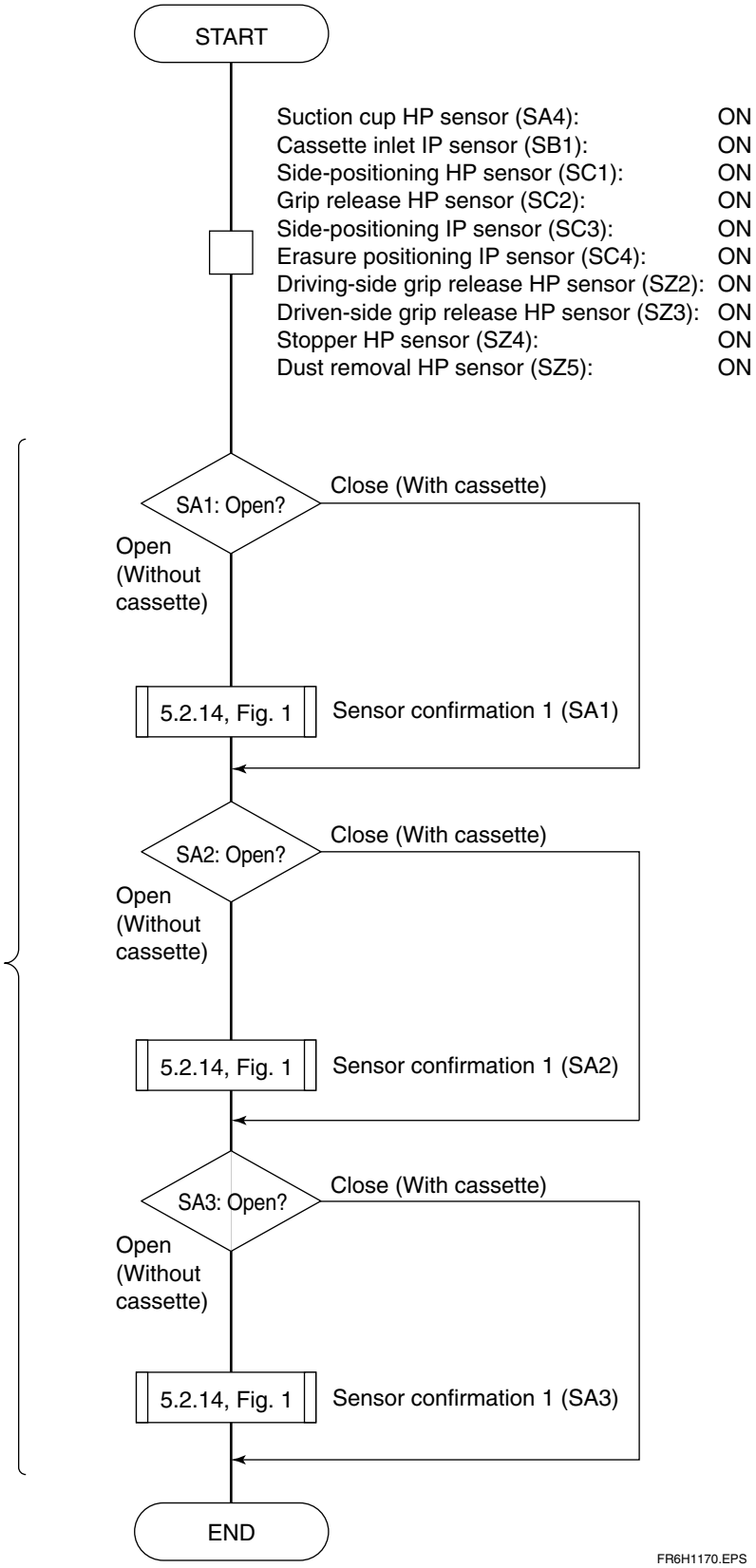

A
SA2: Close?
Open
B
Close
Any remaining IP?
NO
C
YES
CMOS info CMOS clear ?
NO
YES
CMOS info Before reading?
NO
YES
CMOS info Before erasure?
NO
YES
13386
Conveyance CMOS clear
1
11387
Recovery IP processing
Message display
Suction cup movement (HP → feed suction)
[MA1: CCW2195P]: Drive
Delay: 50ms
5.2.13, Fig. 1
Cassette ejection
Solenoid (SolA1): OFF (Hold)
SA3: Open?
Timeout [TA18: within 2000 msec]
Open
D
Delay: 100ms
5.2.1, Fig. 2
Cassette hold release
1
END
FR6H1278.EPS


B
SA1: Close?
Open
1
Close
CMOS info
CMOS clear?
NO
YES
CMOS info
Before reading?
NO
YES
CMOS info
Before erasure?
NO
YES
13386
Conveyance CMOS
clear
D
11387
Recovery IP processing
Message display
5.2.1, Fig. 2
Cassette hold release
Process complete LED displayed
LEDOUT: ON
SA1: Open?
Close (Cassette removal not completed)
Open
(Cassette
removal
completed)
Call LED not-displayed
LEDCALL: OFF
Solenoid (SolA1): OFF (Hold)
Timeout [TA18: within 2000 msec]
SA3 : Open?
Open
1
D
FR6H1279.EPS

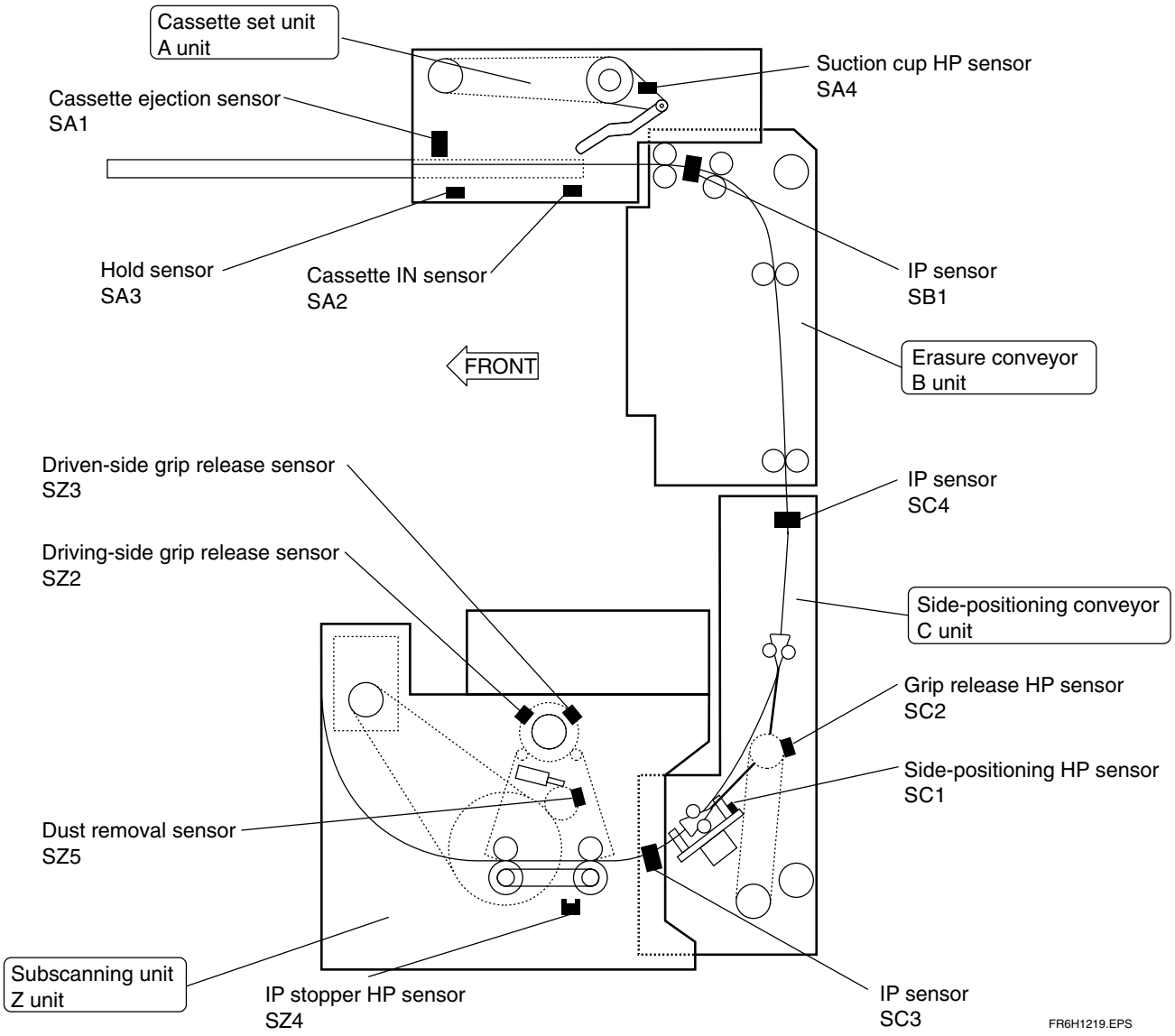

C
5.1.13, Fig. 1
IP confirmation within cassette
No IP
NG
Suction cup movement (HP → feed suction)
[MA1: CCW2195P]: Drive
Delay: 50ms
5.2.13, Fig. 1
Cassette ejection
Solenoid (SolA1): OFF (Hold)
Timeout [TA18: within 2000 msec]
SA3: Open?
Open
Delay: 100ms
FR6H1280.EPS

5.1.1 Sensor ON

<Fig. 1 Sensor ON Flow>



<I/O Locations>



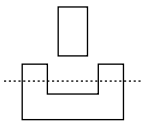
<I/O Table>

Symbol	Name	Type	Function
SA1	Cassette ejection sensor	PI (5mm)	Detects that the cassette has been ejected.
SA2	Cassette IN sensor	PI (5mm)	Detects that the cassette has been inserted.
SA3	Cassette hold sensor	PI (5mm)	Detects the cassette hold completion.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SB1	Cassette inlet IP sensor	PI (19mm)	Detects the IP.
SC1	Side-positioning HP sensor	PI (5mm)	Detects that it is in the side-positioning home position.
SC2	Grip release HP sensor	PI (5mm)	Detects that it is in the grip release home position.
SC3	Side-positioning IP sensor	PI (19mm)	Detects the IP.
SC4	Erasure positioning IP sensor	PI (19mm)	Detects the IP.
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SZ5	Dust removal HP sensor	PI (5mm)	Detects that the dust removal brush is in its home position.

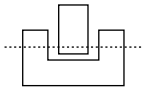
TR6H1079.EPS

<Sensor ON/OFF Status>

SA1/SA3/SA4/SC1/SC2/SZ2/SZ3/SZ4/SZ5

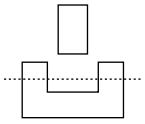


OFF: Open (not blocked)

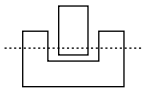


ON: Close (blocked)

SA2

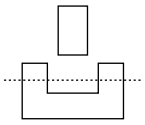


OFF: Open (without cassette)

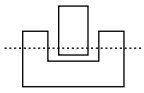


ON: Close (with cassette)

SB1/SC3/SC4



OFF: Open (no IP)



ON: Close (IP found)

FR6H1247.EPS

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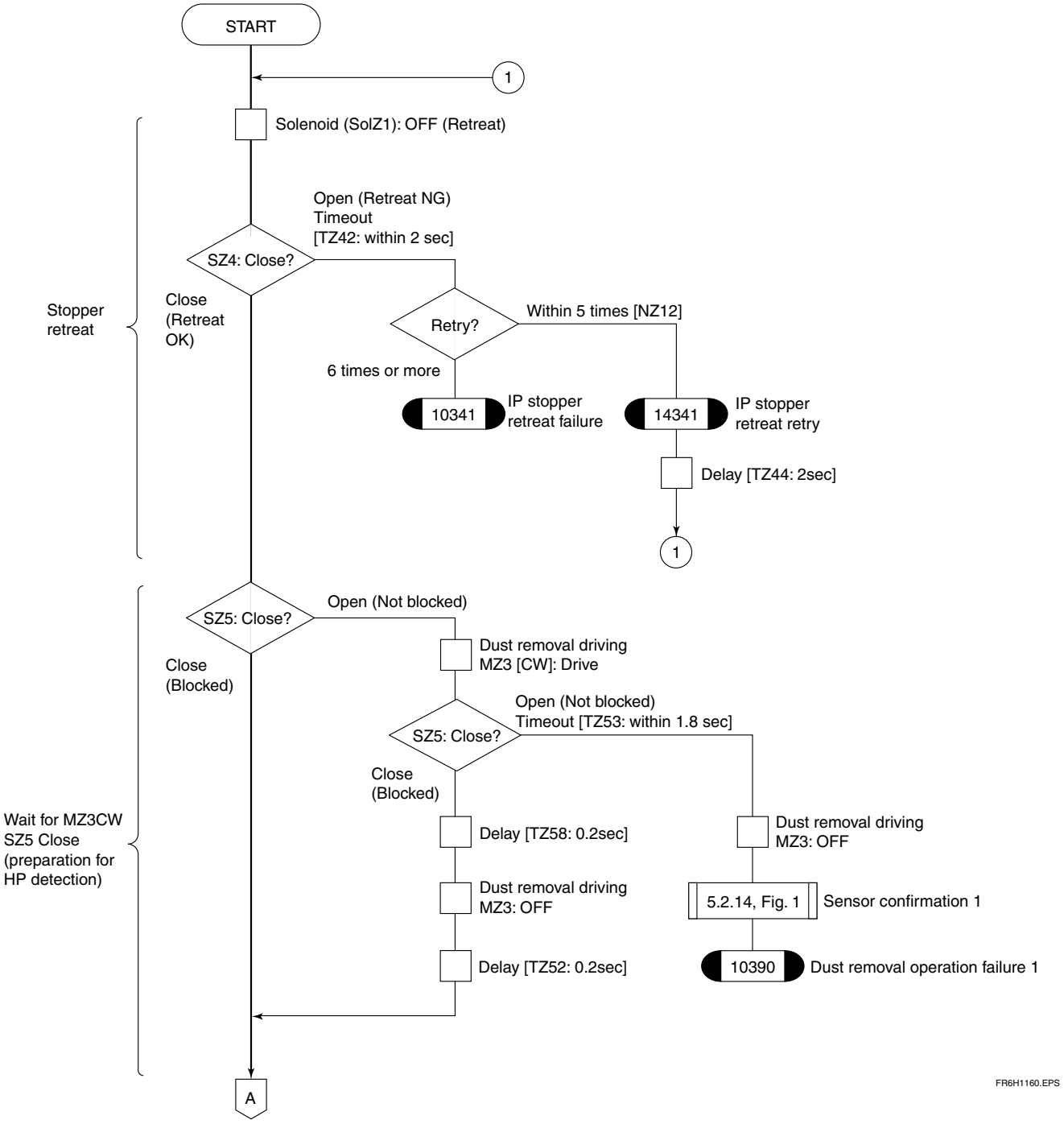
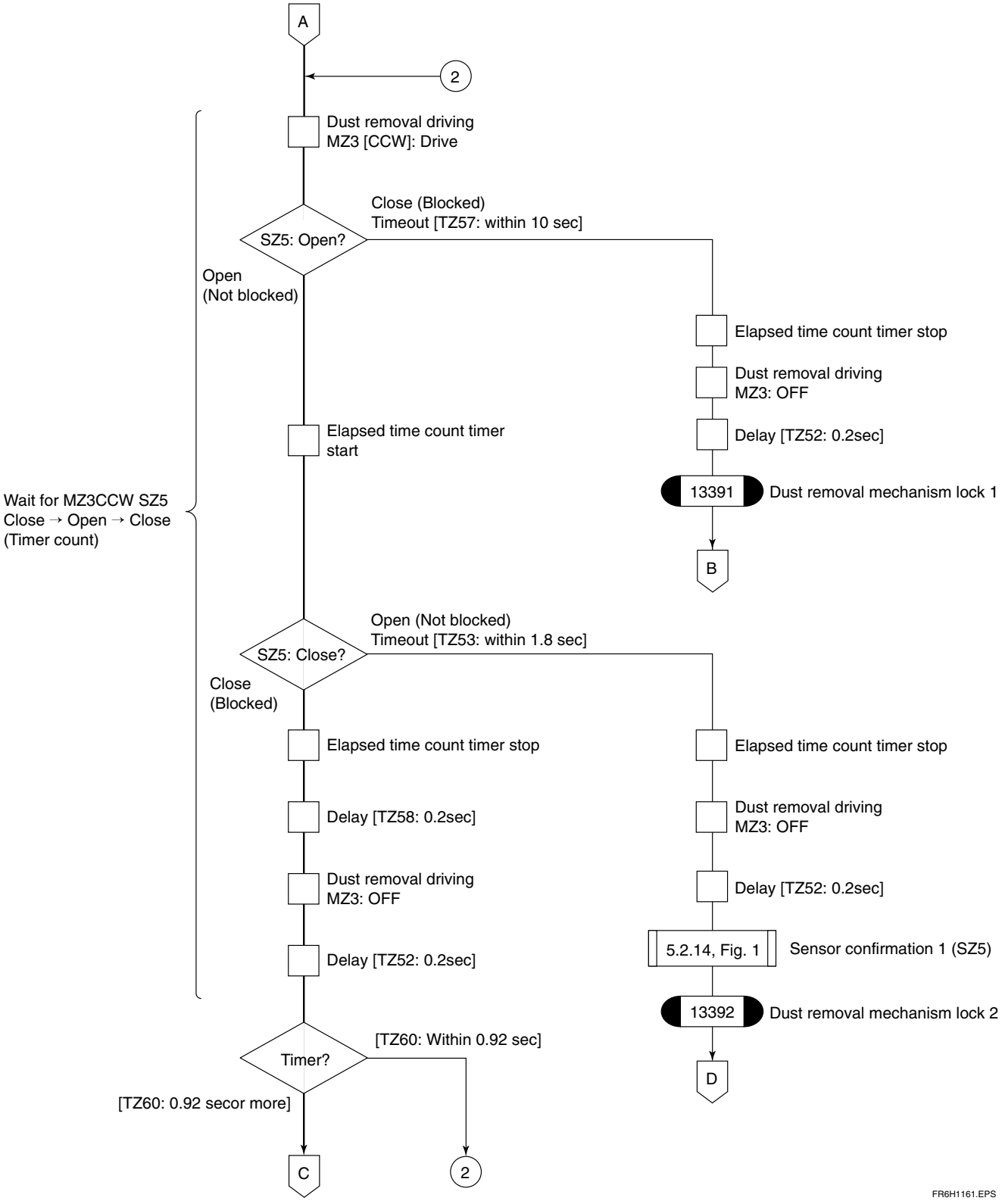
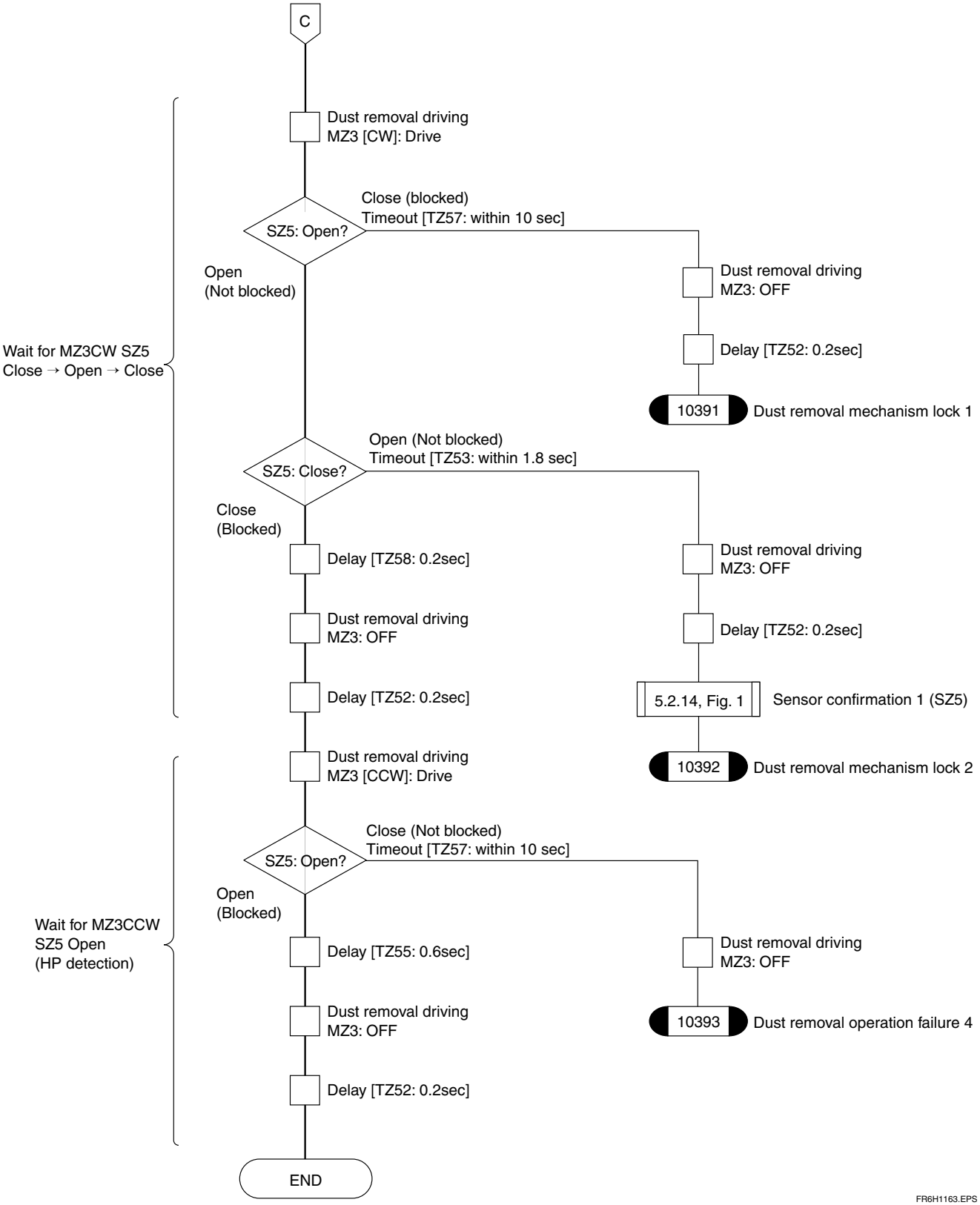
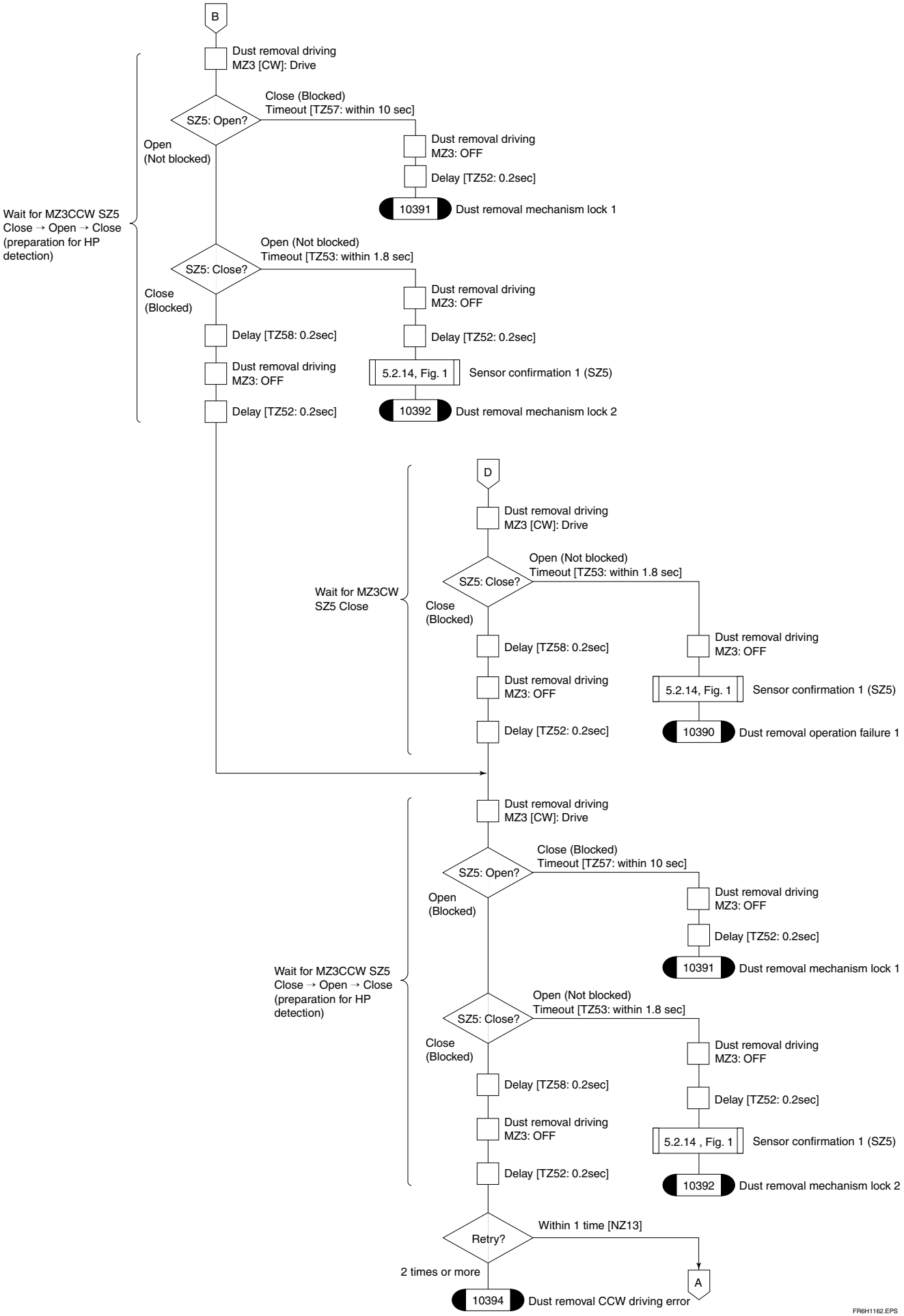
5.1.2 Dust Removal Home Positioning

<Fig. 1 Dust Removal Home Positioning Flow>

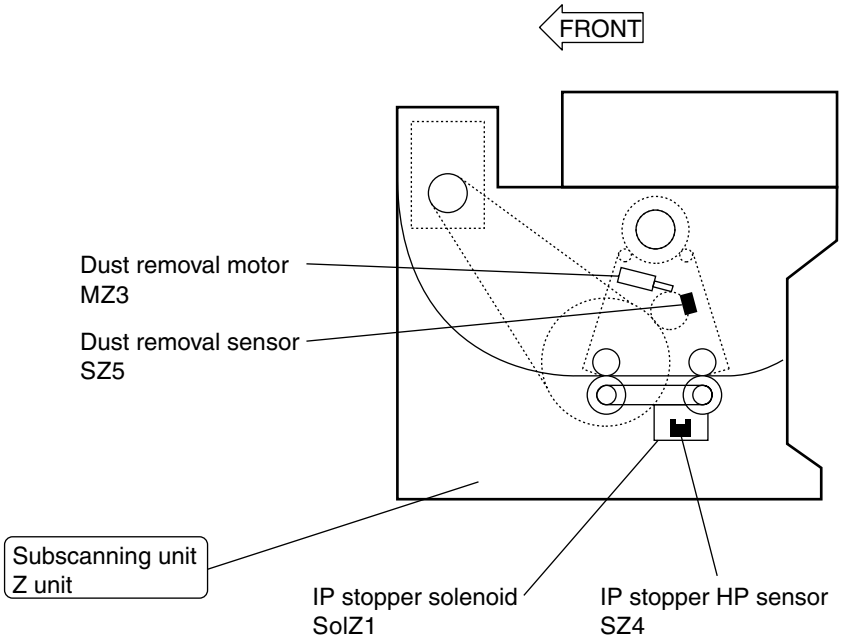



A
2
Dust removal driving
MZ3 [CCW]: Drive
Close (Blocked)
Timeout [TZ57: within 10 sec]
SZ5: Open?
Open
(Not blocked)
Elapsed time count timer stop
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Elapsed time count timer
start
13391
Dust removal mechanism lock 1
B
Wait for MZ3CCW SZ5
Close → Open → Close
(Timer count)
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
SZ5: Close?
Close
(Blocked)
Elapsed time count timer stop
Elapsed time count timer stop
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Delay [TZ52: 0.2sec]
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
13392
Dust removal mechanism lock 2
D
[TZ60: Within 0.92 sec]
Timer?
[TZ60: 0.92 secor more]
C
2
FR6H1161.EPS


C
Dust removal driving
MZ3 [CW]: Drive
Close (blocked)
Timeout [TZ57: within 10 sec]
SZ5: Open?
Open
(Not blocked)
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
10391
Dust removal mechanism lock 1
Wait for MZ3CW SZ5
Close → Open → Close
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
SZ5: Close?
Close
(Blocked)
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Dust removal driving
MZ3 [CCW]: Drive
10392
Dust removal mechanism lock 2
Close (Not blocked)
Timeout [TZ57: within 10 sec]
SZ5: Open?
Open
(Blocked)
Wait for MZ3CCW
SZ5 Open
(HP detection)
Delay [TZ55: 0.6sec]
Dust removal driving
MZ3: OFF
Dust removal driving
MZ3: OFF
10393
Dust removal operation failure 4
Delay [TZ52: 0.2sec]
END
FR6H1163.EPS


B
Dust removal driving
MZ3 [CW]: Drive
SZ5: Open?
Close (Blocked)
Timeout [TZ57: within 10 sec]
Open
(Not blocked)
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
10391
Dust removal mechanism lock 1
Wait for MZ3CCW SZ5
Close → Open → Close
(preparation for HP
detection)
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Close
(Blocked)
Dust removal driving
MZ3: OFF
Delay [TZ58: 0.2sec]
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
10392
Dust removal mechanism lock 2
D
Dust removal driving
MZ3 [CW]: Drive
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Wait for MZ3CW
SZ5 Close
Close
(Blocked)
Delay [TZ58: 0.2sec]
Dust removal driving
MZ3: OFF
Dust removal driving
MZ3: OFF
5.2.14, Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
10390
Dust removal operation failure 1
Dust removal driving
MZ3 [CW]: Drive
SZ5: Open?
Close (Blocked)
Timeout [TZ57: within 10 sec]
Open
(Blocked)
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
10391
Dust removal mechanism lock 1
Wait for MZ3CCW SZ5
Close → Open → Close
(preparation for HP
detection)
SZ5: Close?
Open (Not blocked)
Timeout [TZ53: within 1.8 sec]
Close
(Blocked)
Dust removal driving
MZ3: OFF
Delay [TZ58: 0.2sec]
Delay [TZ52: 0.2sec]
Dust removal driving
MZ3: OFF
5.2.14 , Fig. 1
Sensor confirmation 1 (SZ5)
Delay [TZ52: 0.2sec]
10392
Dust removal mechanism lock 2
Retry?
Within 1 time [NZ13]
2 times or more
A
10394
Dust removal CCW driving error
FR6H1162.EPS

<I/O Locations>



FR6H1220.EPS

<I/O Table>

Symbol	Name	Type	Function
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.

TR6H1072.EPS

<Sensor ON/OFF Status>

SZ4/SZ5

OFF: Open (not blocked)

ON: Close (blocked)

FR6H1248.EPS

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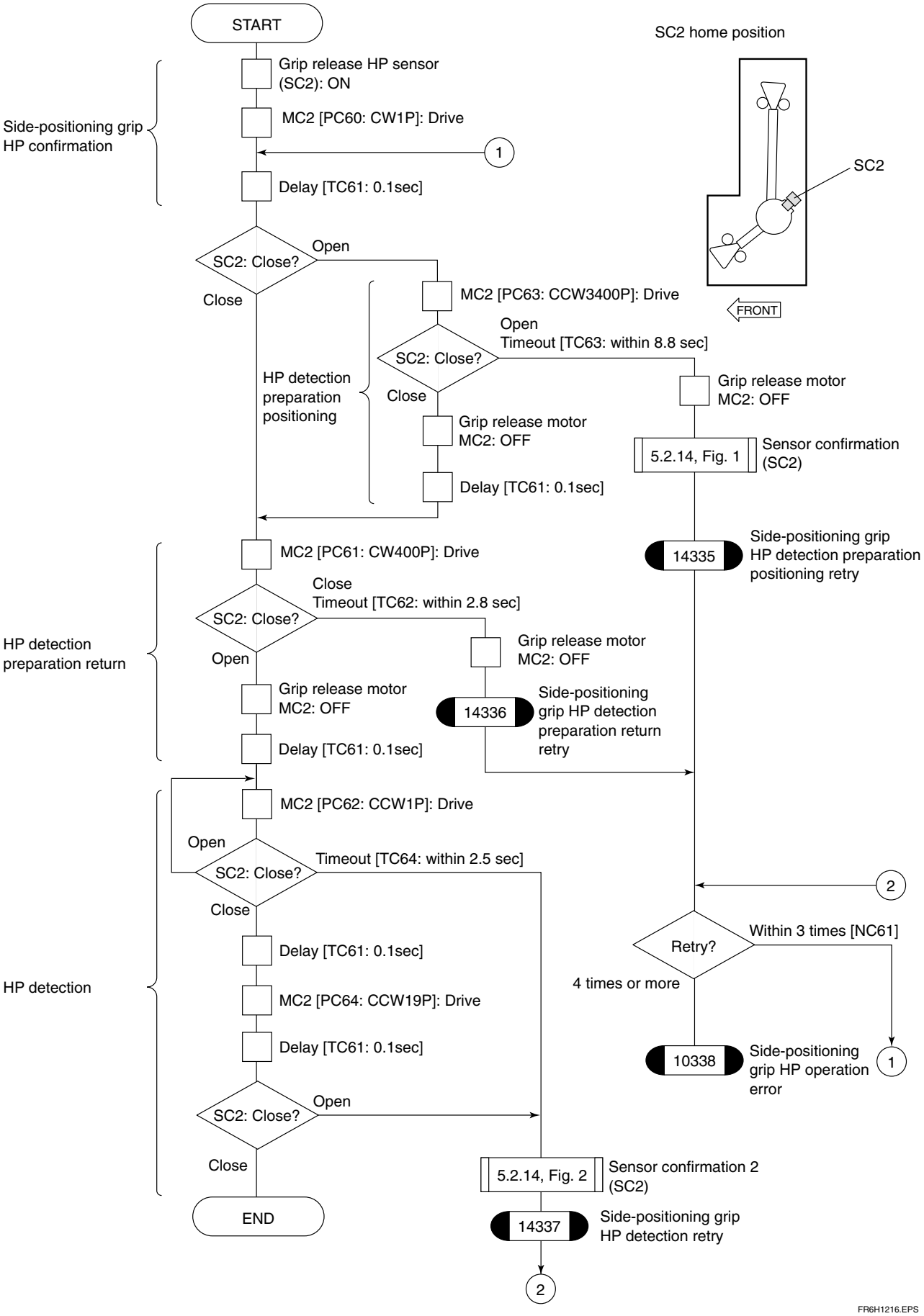
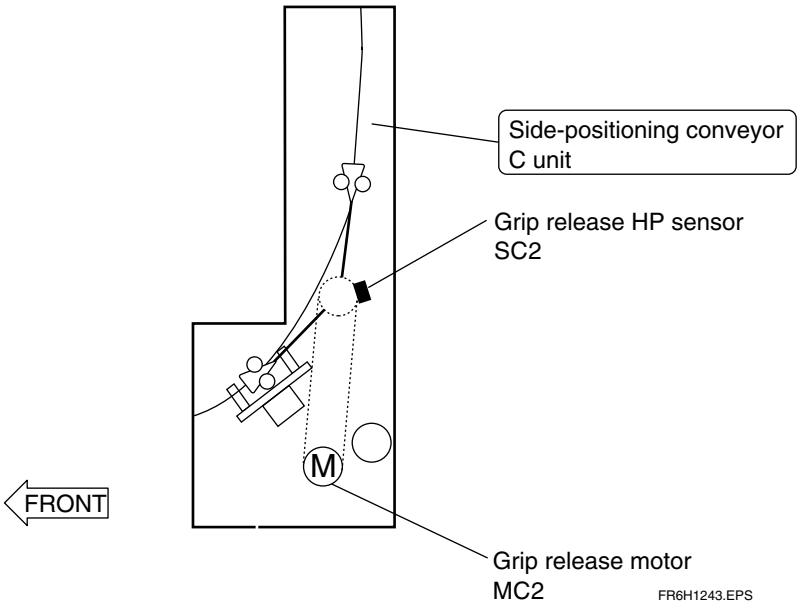
5.1.3 Side-Positioning Grip Home Positioning

<Fig. 1 Side-Positioning Grip Home Positioning Flow>



<I/O Locations>



FR6H1243.EPS

<I/O Table>

Symbol	Name	Type	Function
SC2	Grip release HP sensor	PI (5mm)	Detects that it is in the grip release home position.
MC2	Grip release motor	Pulse motor	Drives to release the grip.

TR6H1091.EPS

<Sensor ON/OFF Status>

SA1/SA3/SA4

OFF: Open (not blocked) ON: Close (blocked)

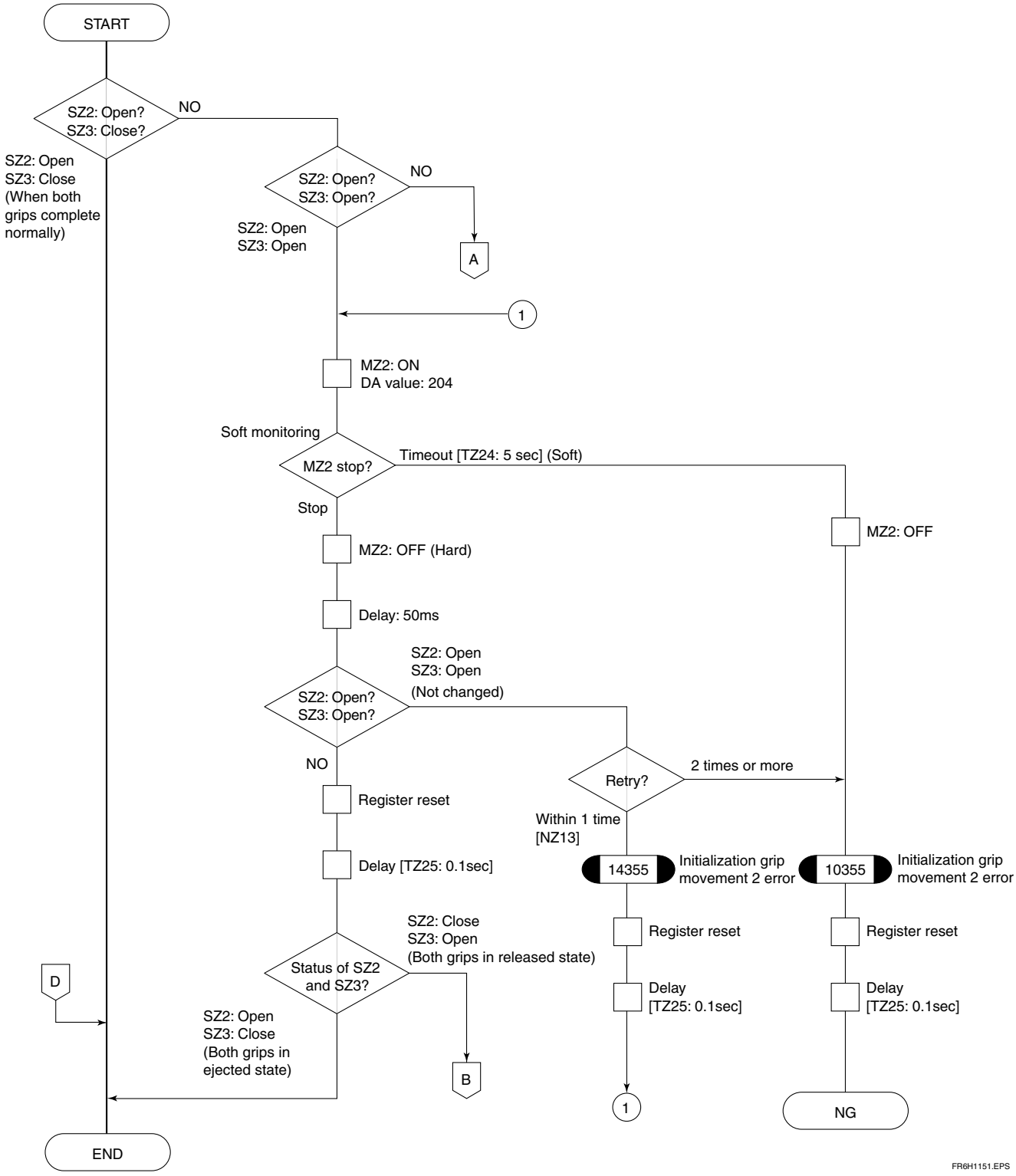
SA2

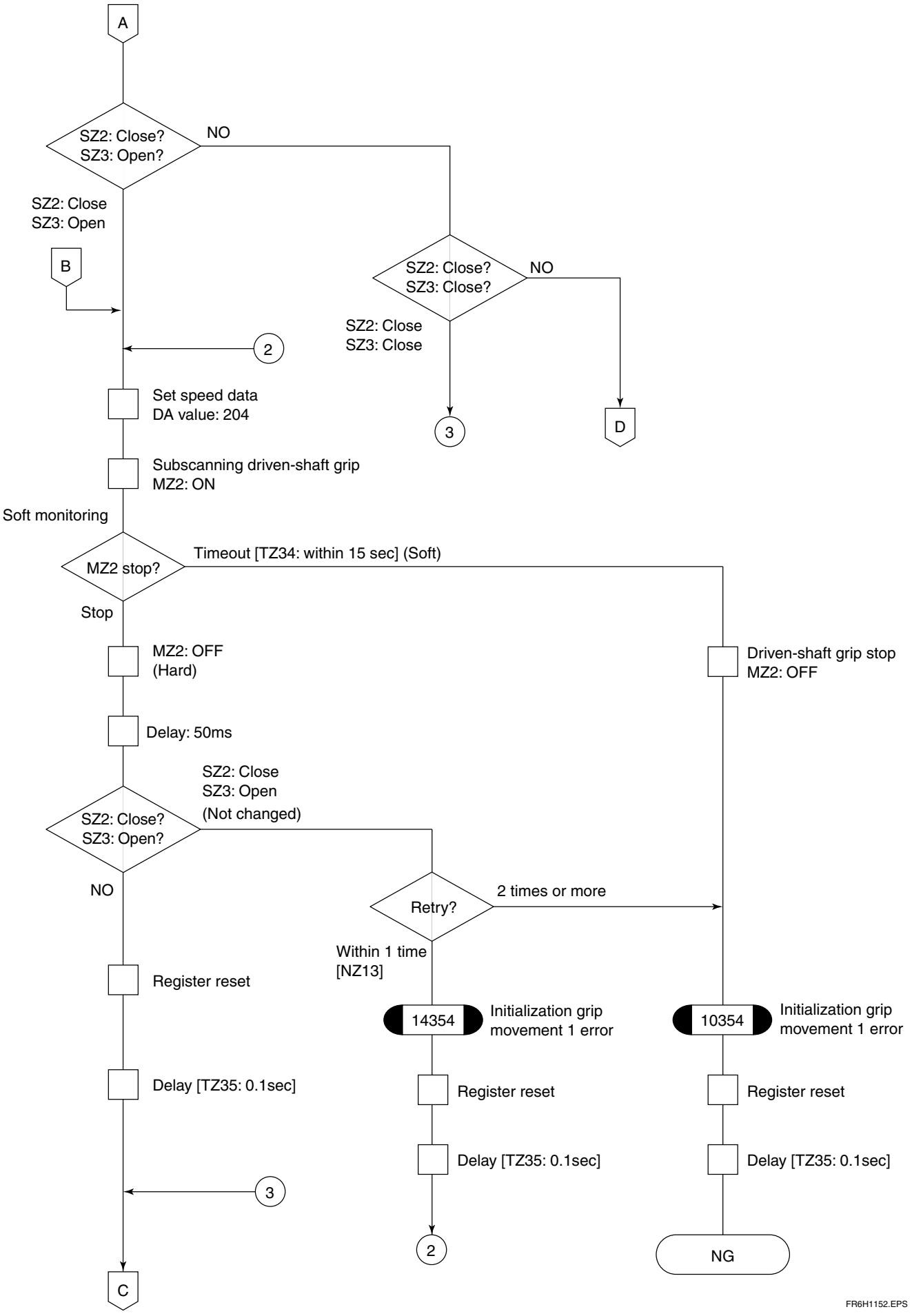
OFF: Open (without cassette) ON: Close (with cassette)

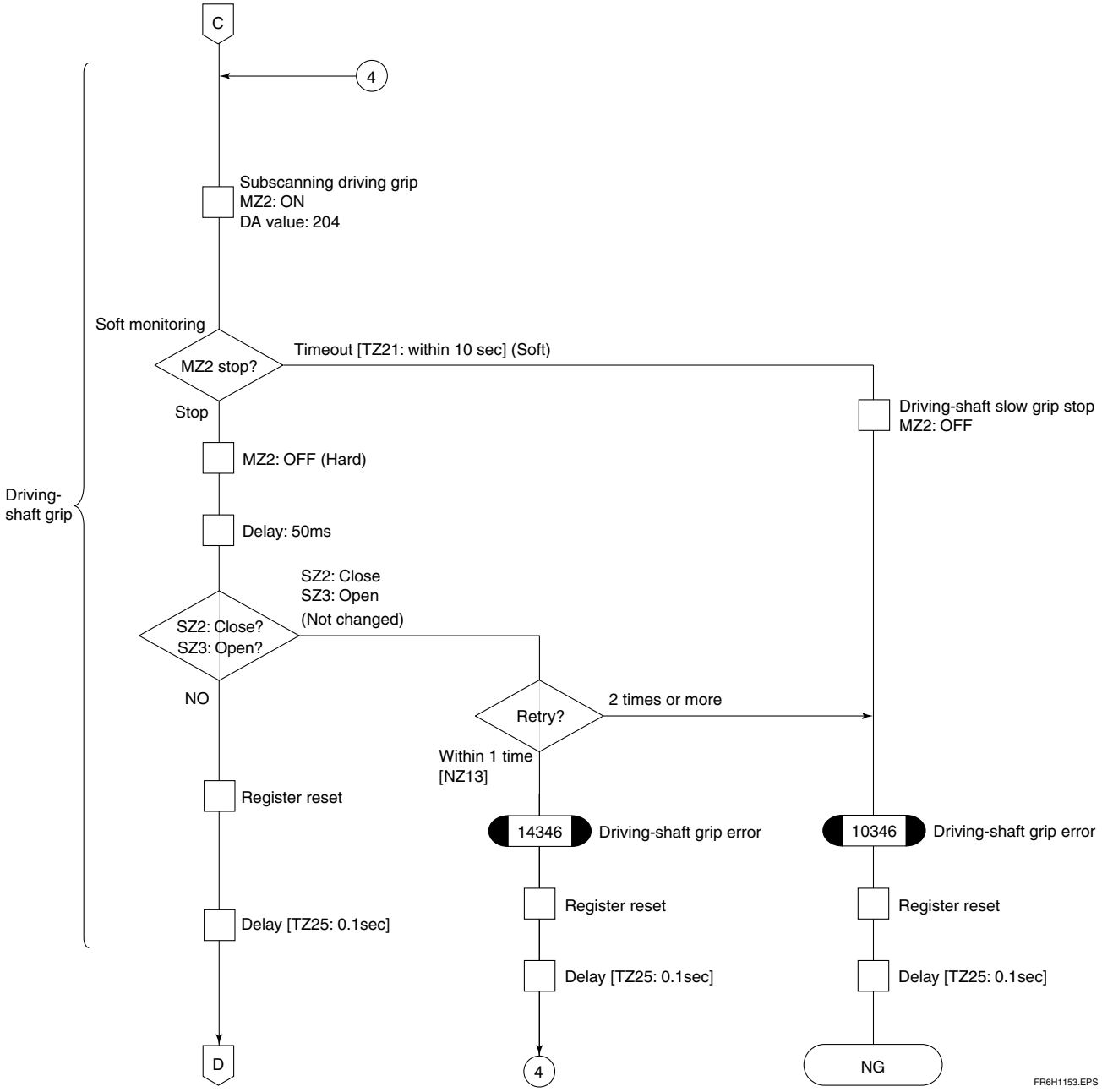
FR6H1268.EPS

5.1.4 Subscanning Grip Confirmation

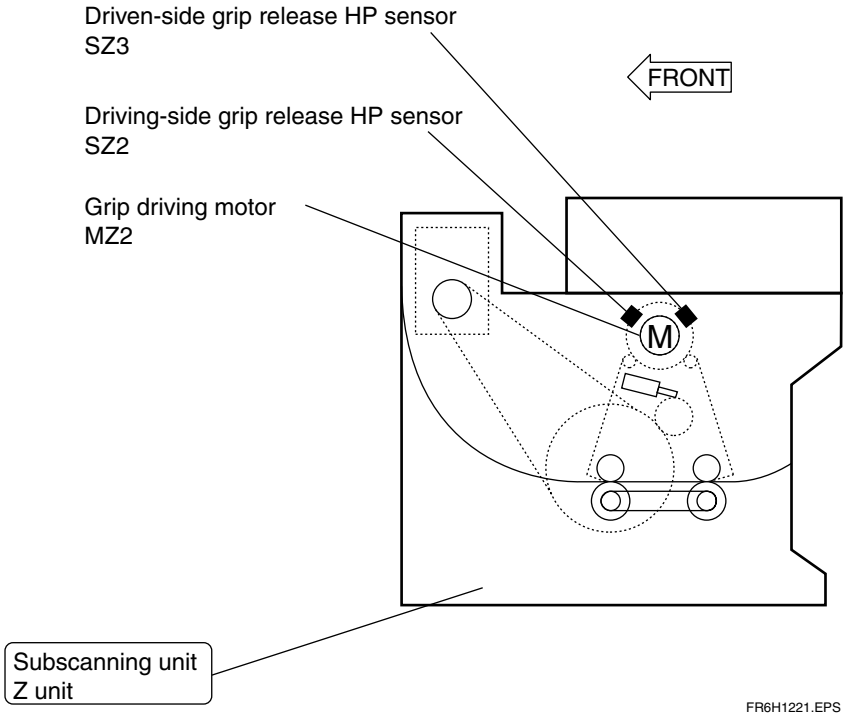
<Fig. 1 Subscanning Grip Confirmation Flow>




A
SZ2: Close?
SZ3: Open?
NO
SZ2: Close
SZ3: Open
B
SZ2: Close?
SZ3: Close?
NO
SZ2: Close
SZ3: Close
2
3
D
Set speed data
DA value: 204
Subscanning driven-shaft grip
MZ2: ON
Soft monitoring
MZ2 stop?
Timeout [TZ34: within 15 sec] (Soft)
Stop
MZ2: OFF
(Hard)
Driven-shaft grip stop
MZ2: OFF
Delay: 50ms
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
14354
Initialization grip
movement 1 error
10354
Initialization grip
movement 1 error
Delay [TZ35: 0.1sec]
Register reset
Register reset
Delay [TZ35: 0.1sec]
Delay [TZ35: 0.1sec]
3
2
NG
C
FR6H1152.EPS


C
4
Subscanning driving grip
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
Timeout [TZ21: within 10 sec] (Soft)
Stop
Driving-shaft slow grip stop
MZ2: OFF
MZ2: OFF (Hard)
Driving-
shaft grip
Delay: 50ms
SZ2: Close
SZ3: Open
(Not changed)
SZ2: Close?
SZ3: Open?
NO
Retry?
2 times or more
Within 1 time
[NZ13]
Register reset
14346
Driving-shaft grip error
10346
Driving-shaft grip error
Register reset
Register reset
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
D
4
NG
FR6H1153.EPS

<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).

TR6H1074.EPS

<Sensor ON/OFF Status>

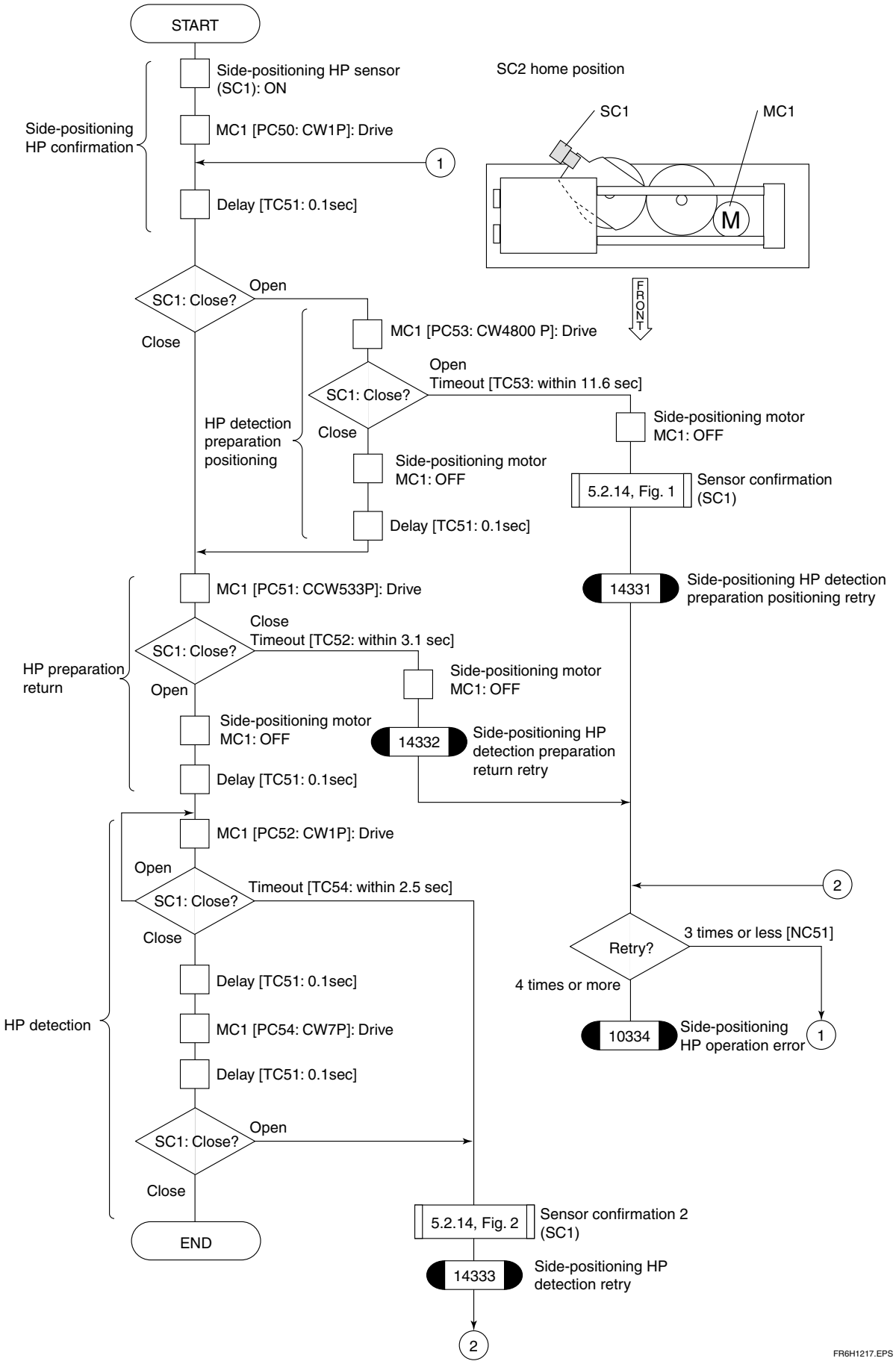
SZ2/SZ3

OFF: Open (not blocked) ON: Close (blocked)

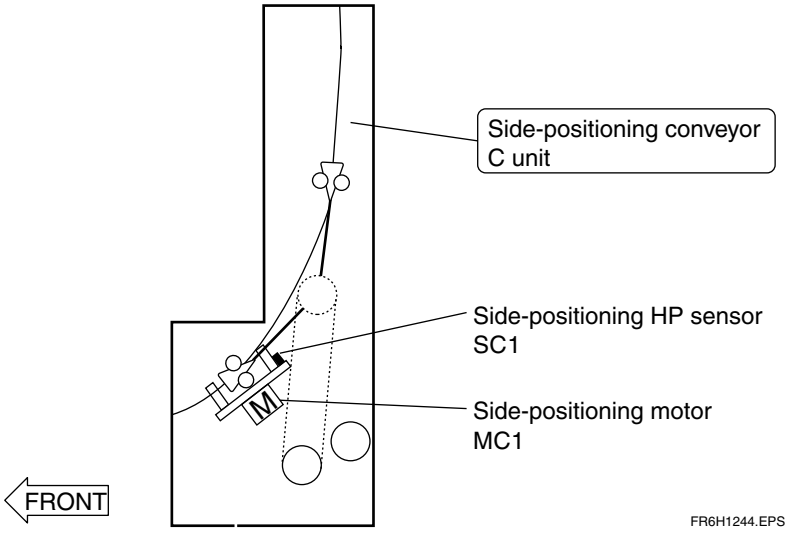
FR6H1249.EPS

5.1.5 Side-Positioning Home Positioning

<Fig. 1 Side-Positioning Home Positioning Flow>



<I/O Locations>



FR6H1244.EPS

<I/O Table>

Symbol	Name	Type	Function
SC1	Side-positioning HP sensor	PI (5mm)	Detects that it is in the side-positioning home position.
MC1	Side-positioning motor	Pulse motor	Drives the side-positioning mechanism.

TR6H1092.EPS

<Sensor ON/OFF Status>

SC1

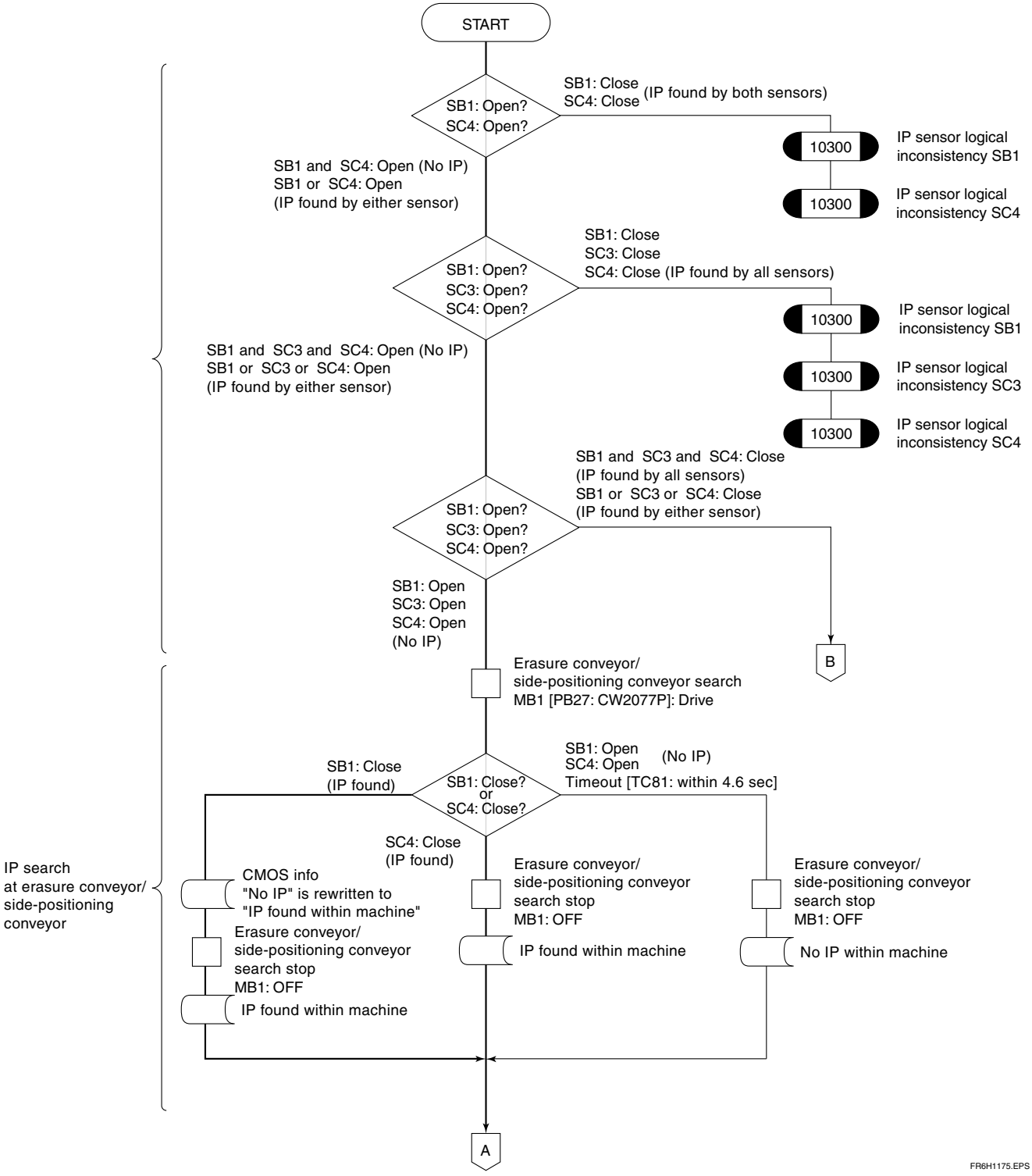
OFF: Open (not blocked)

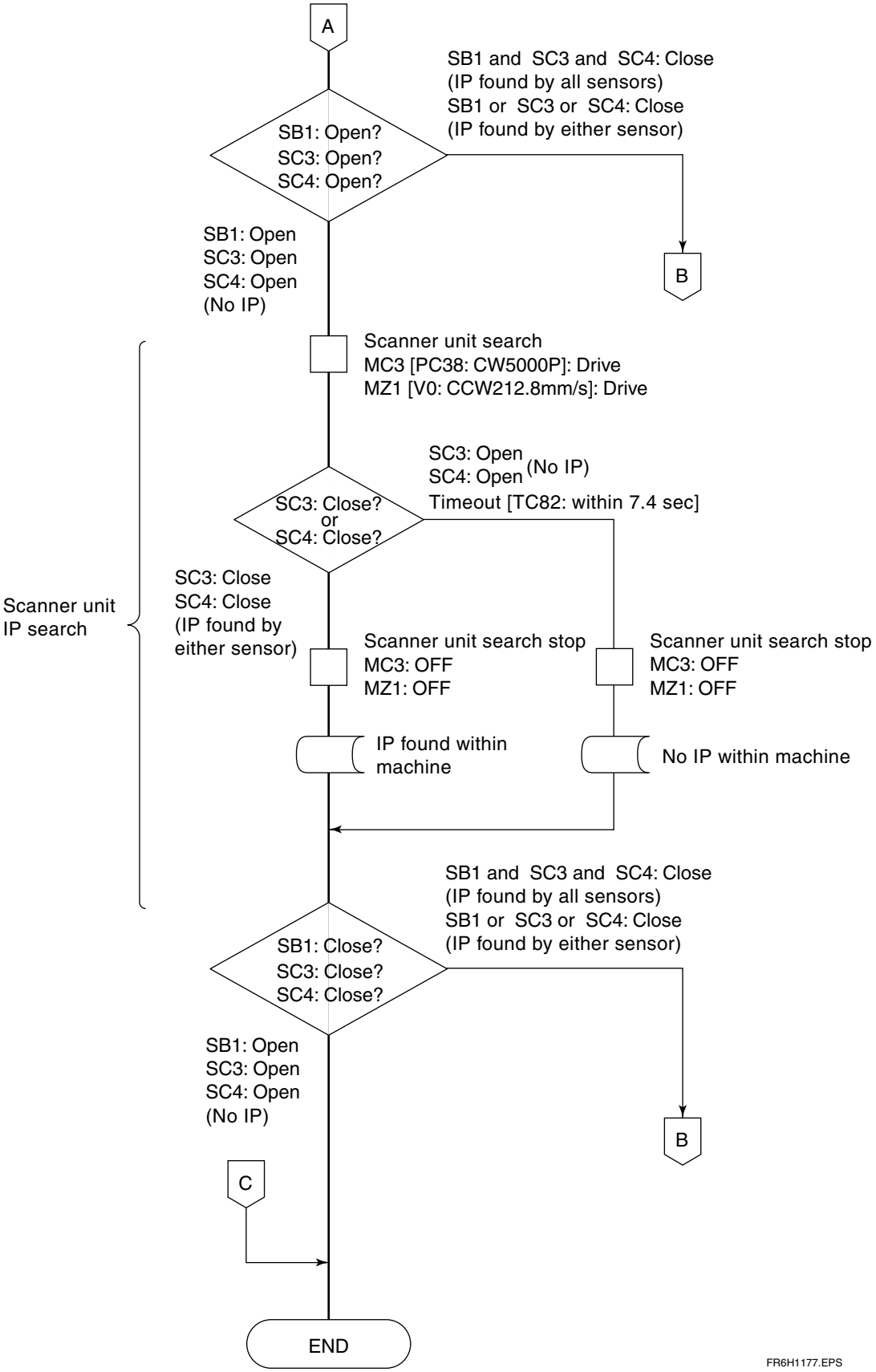
ON: Close (blocked)

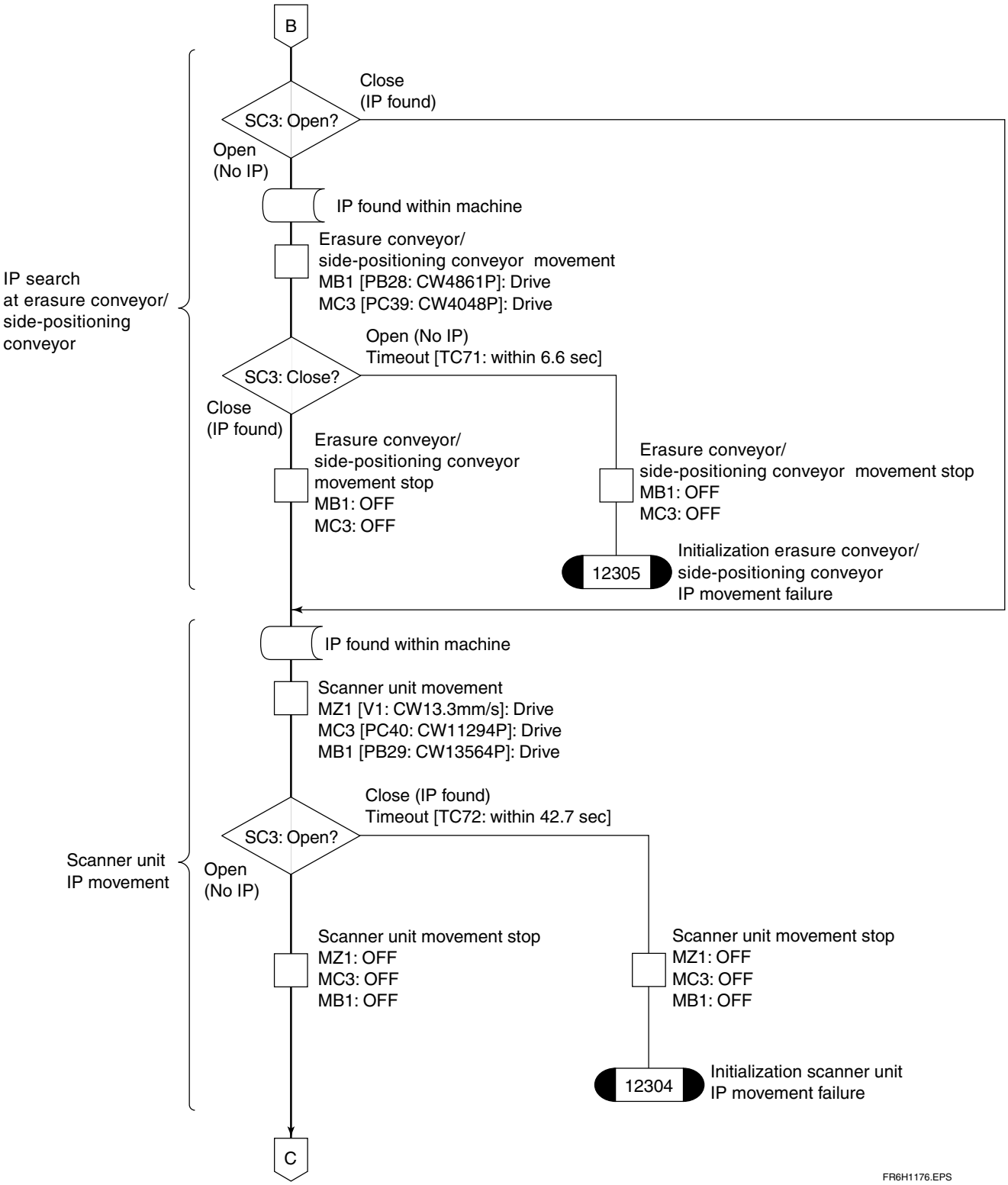
FR6H1270.EPS

5.1.6 IP Search

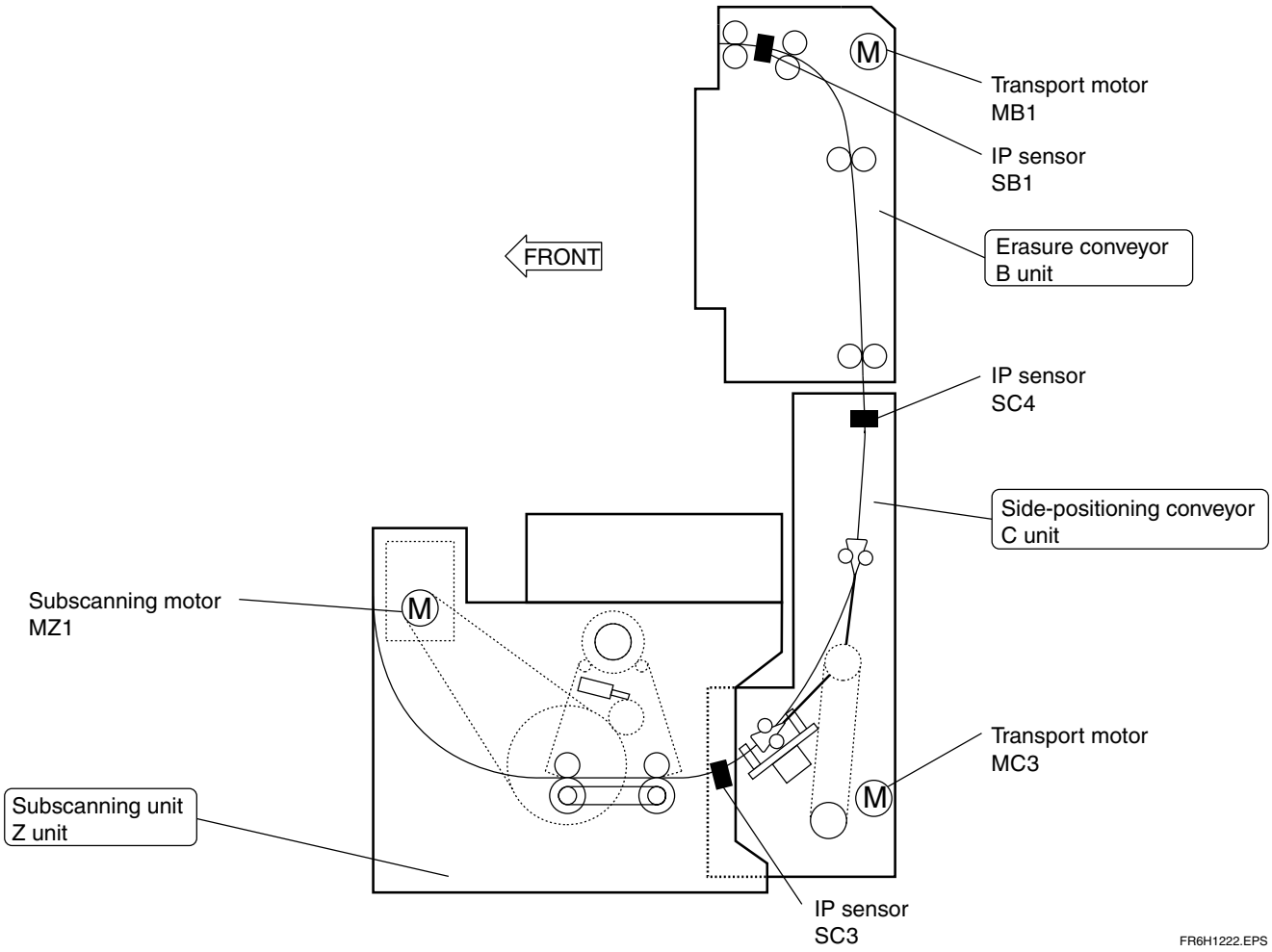
<Fig. 1 IP Search Flow>




A
SB1 and SC3 and SC4: Close
(IP found by all sensors)
SB1 or SC3 or SC4: Close
(IP found by either sensor)
SB1: Open?
SC3: Open?
SC4: Open?
B
SB1: Open
SC3: Open
SC4: Open
(No IP)
Scanner unit search
MC3 [PC38: CW5000P]: Drive
MZ1 [V0: CCW212.8mm/s]: Drive
SC3: Open
SC4: Open (No IP)
Timeout [TC82: within 7.4 sec]
SC3: Close?
or
SC4: Close?
Scanner unit
IP search
SC3: Close
SC4: Close
(IP found by
either sensor)
Scanner unit search stop
MC3: OFF
MZ1: OFF
Scanner unit search stop
MC3: OFF
MZ1: OFF
IP found within
machine
No IP within machine
SB1 and SC3 and SC4: Close
(IP found by all sensors)
SB1 or SC3 or SC4: Close
(IP found by either sensor)
SB1: Close?
SC3: Close?
SC4: Close?
SB1: Open
SC3: Open
SC4: Open
(No IP)
B
C
END
FR6H1177.EPS


B
Close
(IP found)
SC3: Open?
Open
(No IP)
IP found within machine
Erasure conveyor/
side-positioning conveyor movement
MB1 [PB28: CW4861P]: Drive
MC3 [PC39: CW4048P]: Drive
IP search
at erasure conveyor/
side-positioning
conveyor
Open (No IP)
Timeout [TC71: within 6.6 sec]
SC3: Close?
Close
(IP found)
Erasure conveyor/
side-positioning conveyor
movement stop
MB1: OFF
MC3: OFF
Erasure conveyor/
side-positioning conveyor movement stop
MB1: OFF
MC3: OFF
12305
Initialization erasure conveyor/
side-positioning conveyor
IP movement failure
IP found within machine
Scanner unit movement
MZ1 [V1: CW13.3mm/s]: Drive
MC3 [PC40: CW11294P]: Drive
MB1 [PB29: CW13564P]: Drive
Close (IP found)
Timeout [TC72: within 42.7 sec]
SC3: Open?
Scanner unit
IP movement
Open
(No IP)
Scanner unit movement stop
MZ1: OFF
MC3: OFF
MB1: OFF
Scanner unit movement stop
MZ1: OFF
MC3: OFF
MB1: OFF
12304
Initialization scanner unit
IP movement failure
C
FR6H1176.EPS

<I/O Locations>



FR6H1222.EPS

<I/O Table>

Symbol	Name	Type	Function
SB1	Cassette inlet IP sensor	PI (19mm)	Detects the presence of an IP.
SC3	Side-positioning IP sensor	PI (19mm)	Detects the IP.
SC4	Erasure positioning IP sensor	PI (19mm)	Detects the IP.
MB1	IP transport motor	Pulse motor	Conveys the IP.
MC3	IP transport motor	Pulse motor	Conveys the IP.
MZ1	Subscanning motor	FFM	Conveys the IP.

TR6H1081.EPS

<Sensor ON/OFF Status>

SB1/SC3/SC4

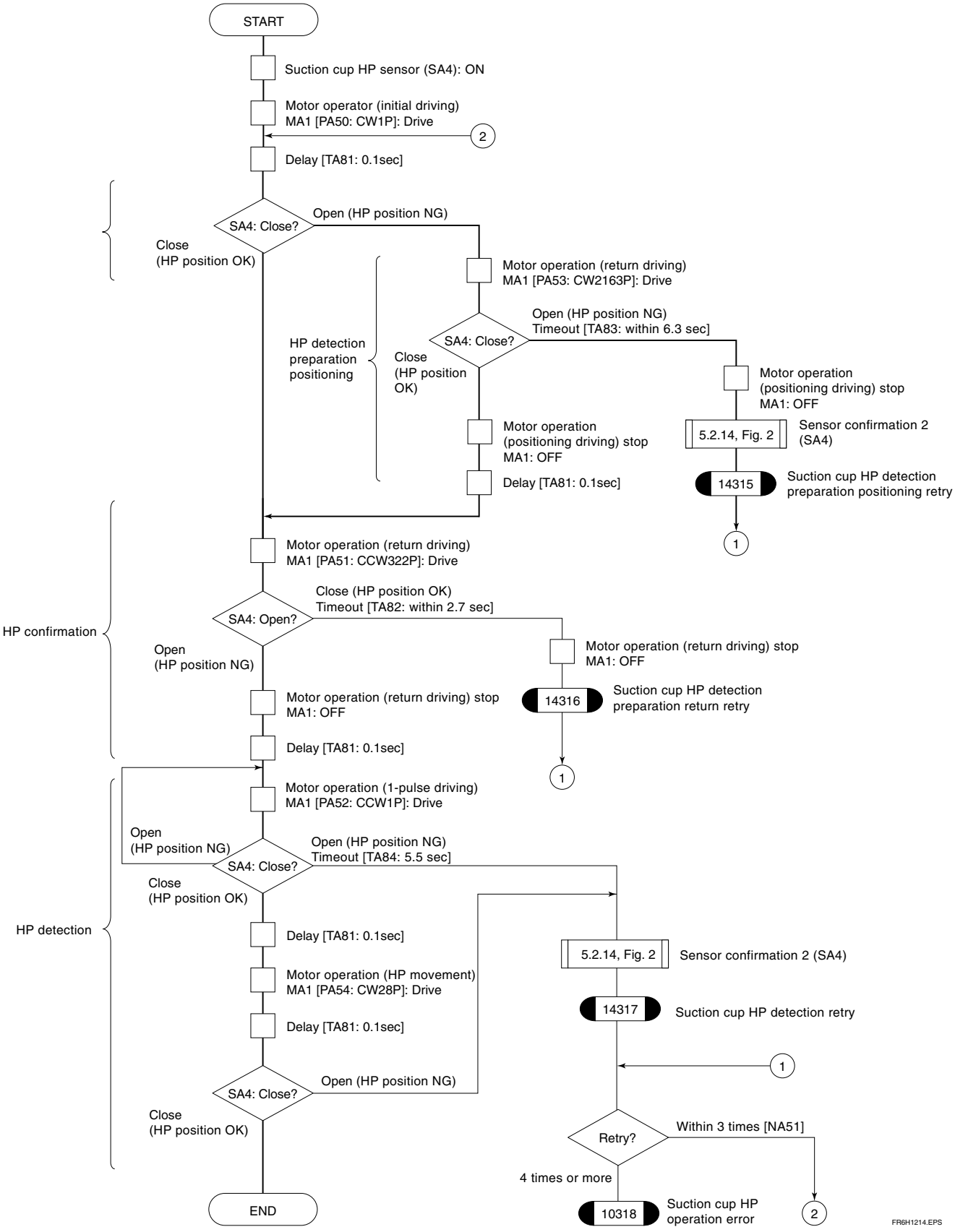
OFF: Open (no IP)

ON: Close (IP found)

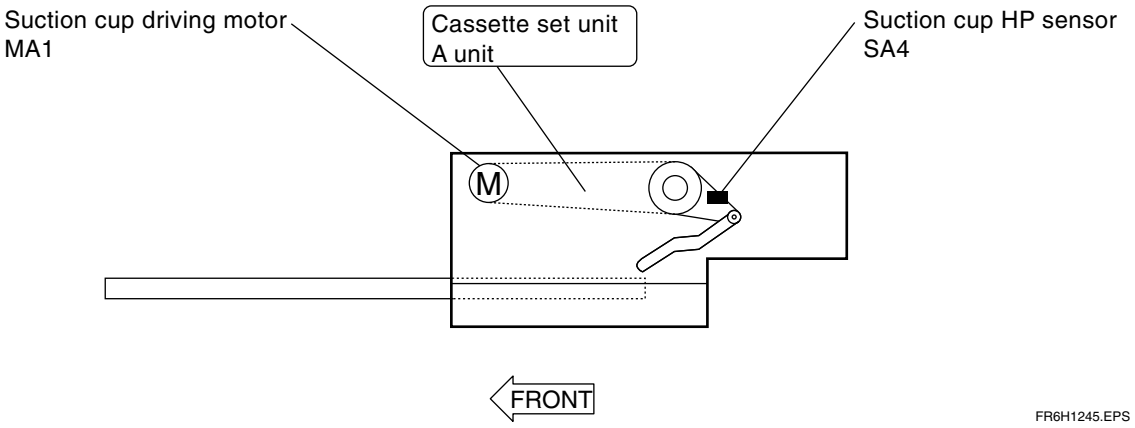
FR6H1250.EPS

5.1.7 Suction Cup Home Positioning

<Fig. 1 Suction Cup Home Positioning Flow>



<I/O Locations>



FR6H1245.EPS

<I/O Table>

Symbol	Name	Type	Function
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.

TR6H1093.EPS

<Sensor ON/OFF Status>

SA1

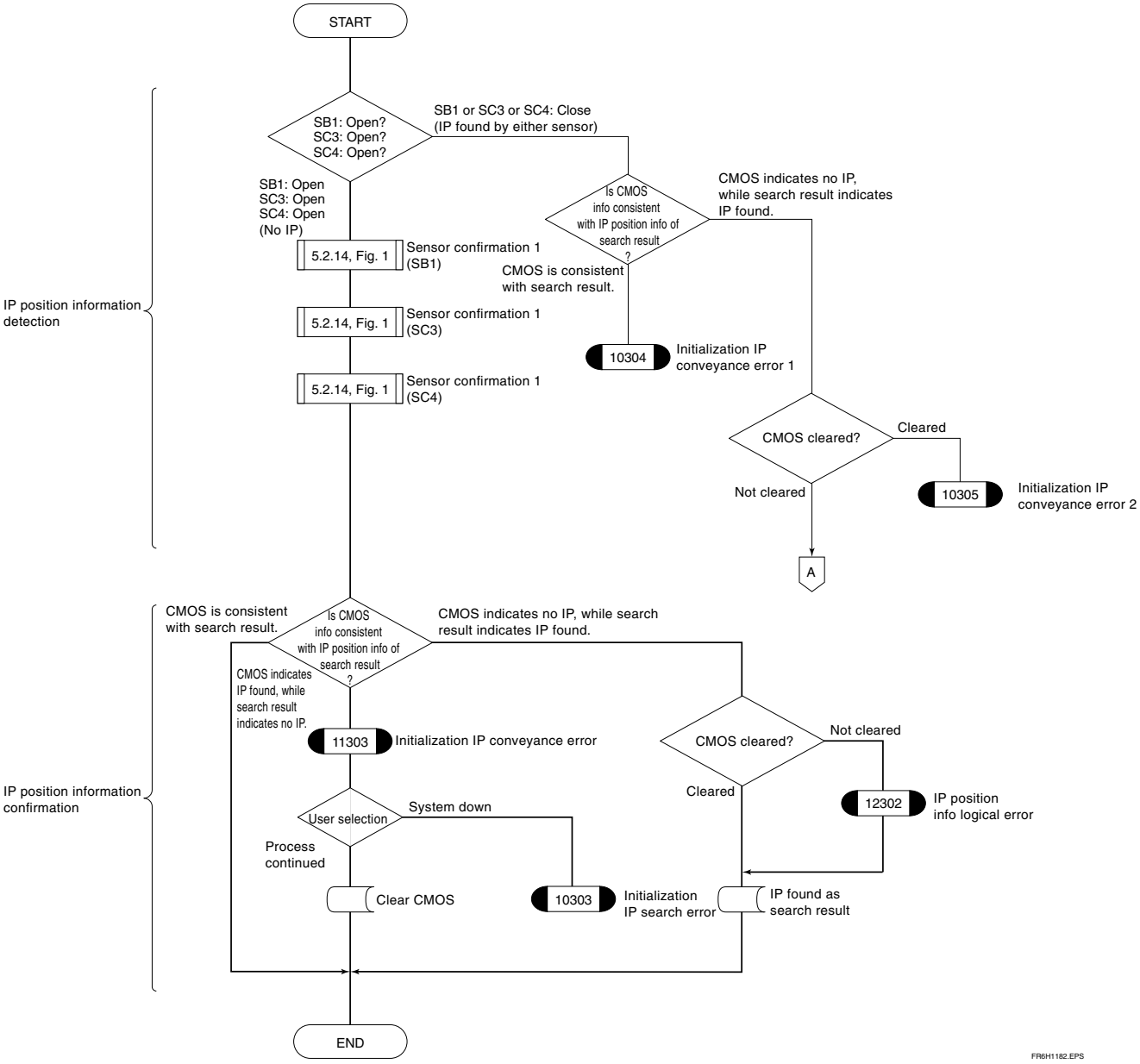
OFF: Open (not blocked)

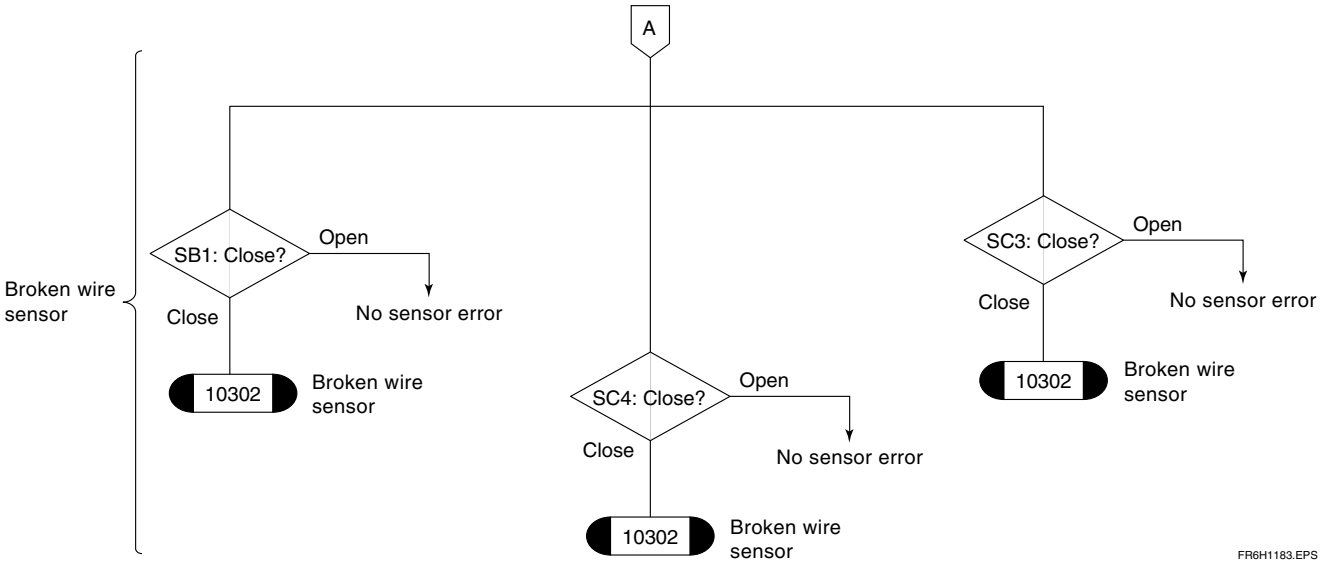
ON: Close (blocked)

FR6H1271.EPS

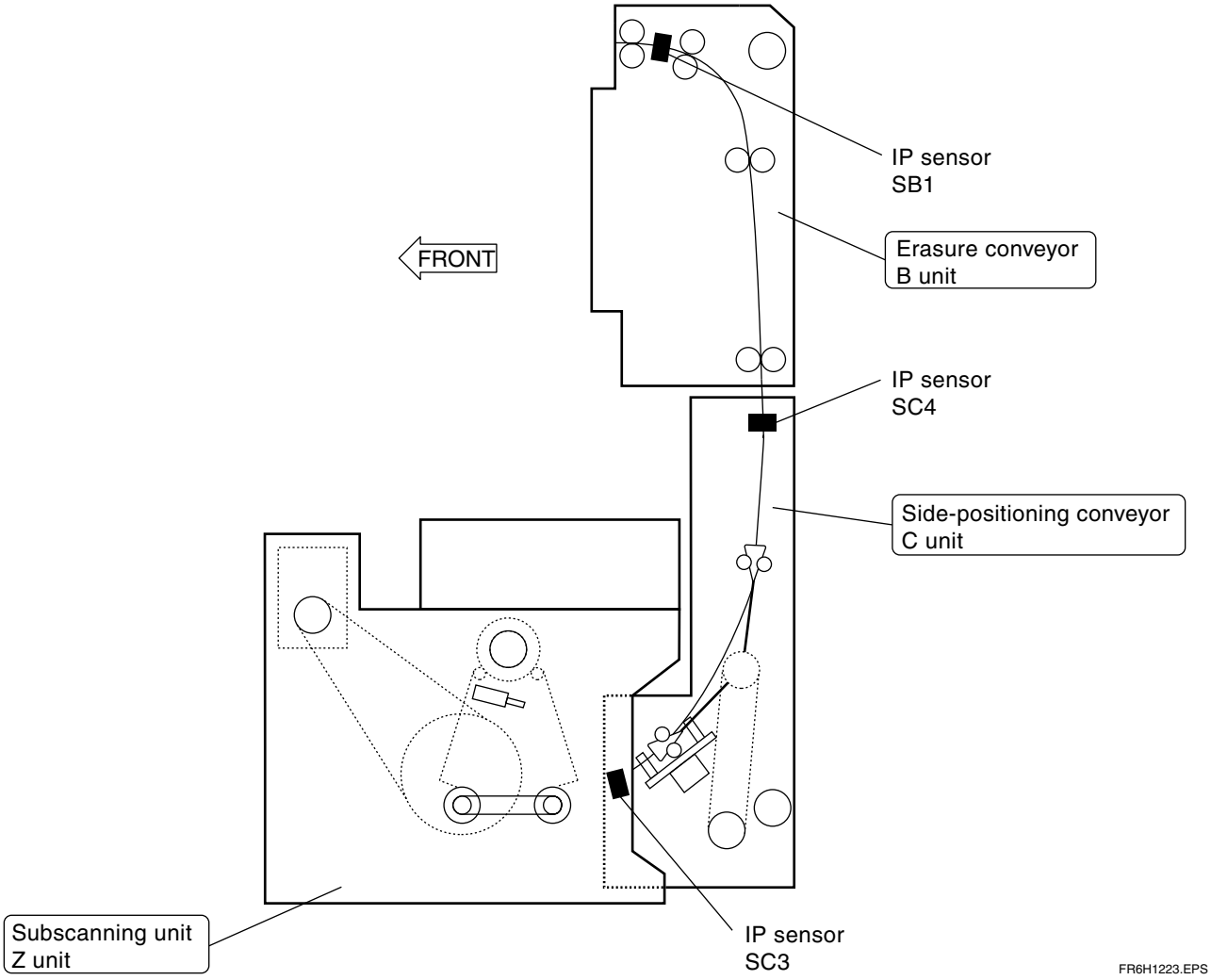
5.1.8 IP Position Information Confirmation

<Fig. 1 IP Position Information Confirmation Flow>




A
Broken wire sensor
SB1: Close?
Open
No sensor error
Close
10302
Broken wire sensor
SC4: Close?
Open
No sensor error
Close
10302
Broken wire sensor
SC3: Close?
Open
No sensor error
Close
10302
Broken wire sensor
FR6H1183.EPS

<I/O Locations>



FR6H1223.EPS

<I/O Table>

Symbol	Name	Type	Function
SB1	Cassette inlet IP sensor	PI (19mm)	Detects the presence of an IP.
SC3	Side-positioning IP sensor	PI (19mm)	Detects the IP.
SC4	Erasure positioning IP sensor	PI (19mm)	Detects the IP.

TR6H1077.EPS

<Sensor ON/OFF Status>

SB1/SC3/SC4

OFF: Open (no IP)

ON: Close (IP found)

FR6H1251.EPS

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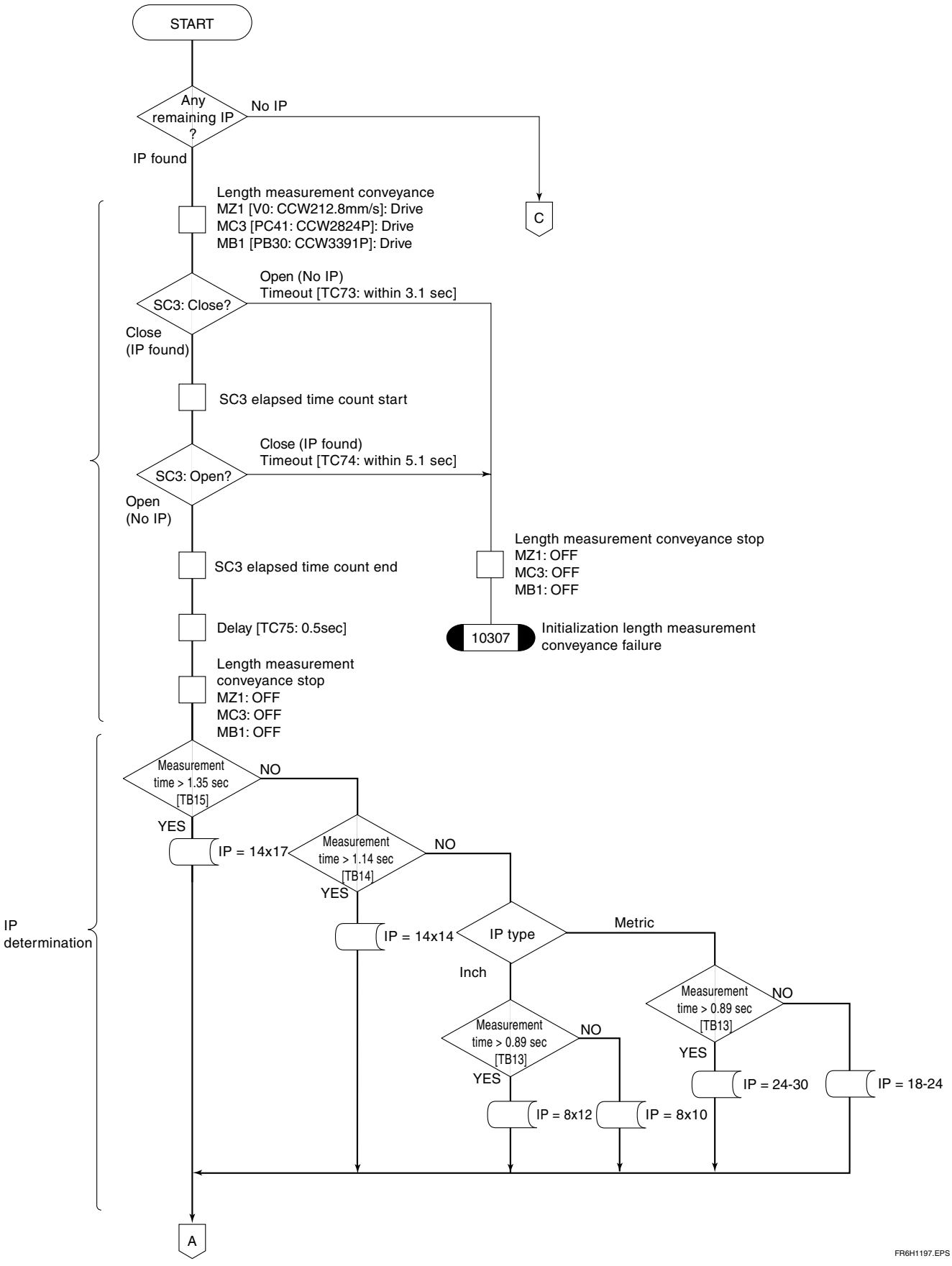
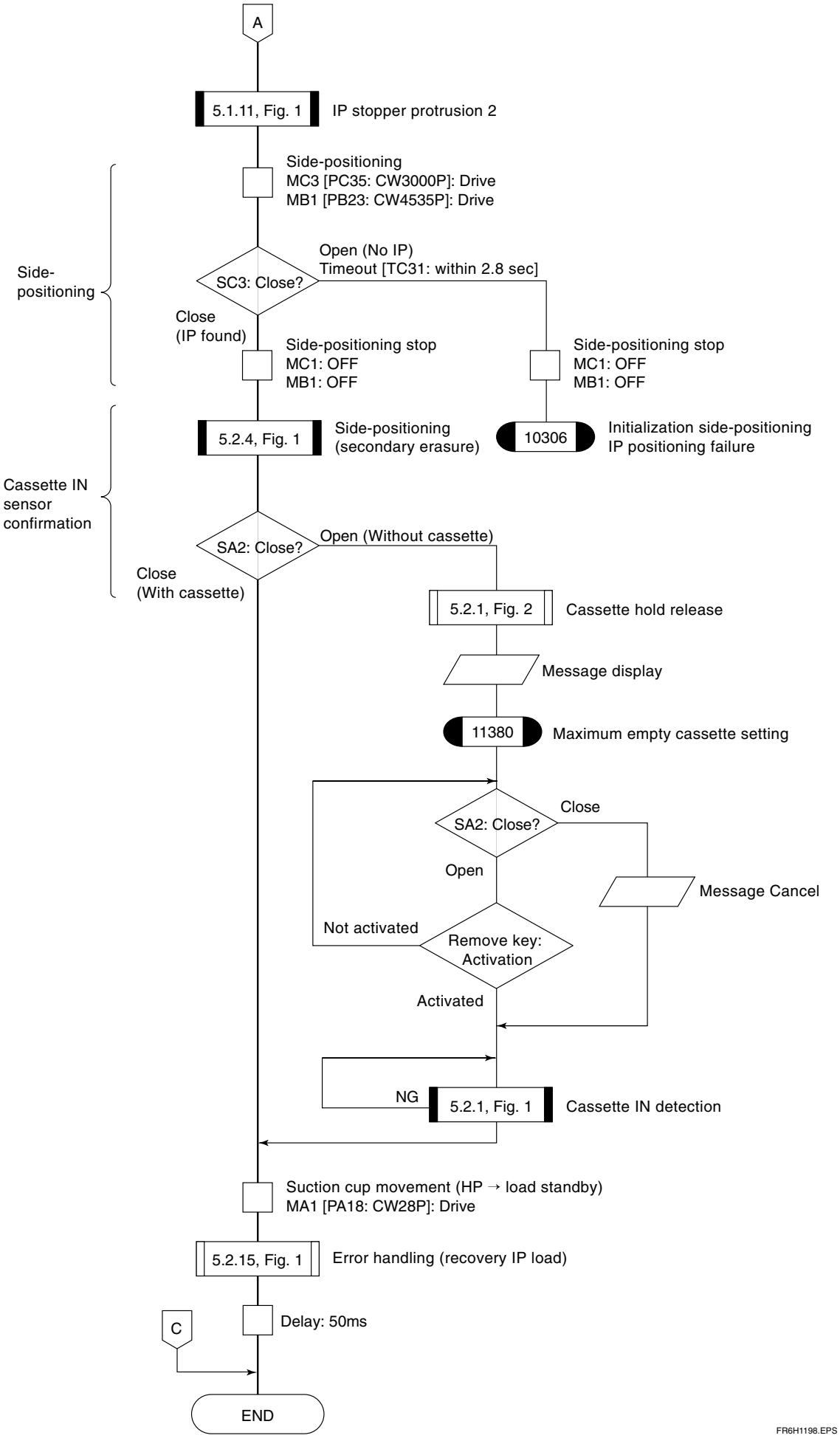
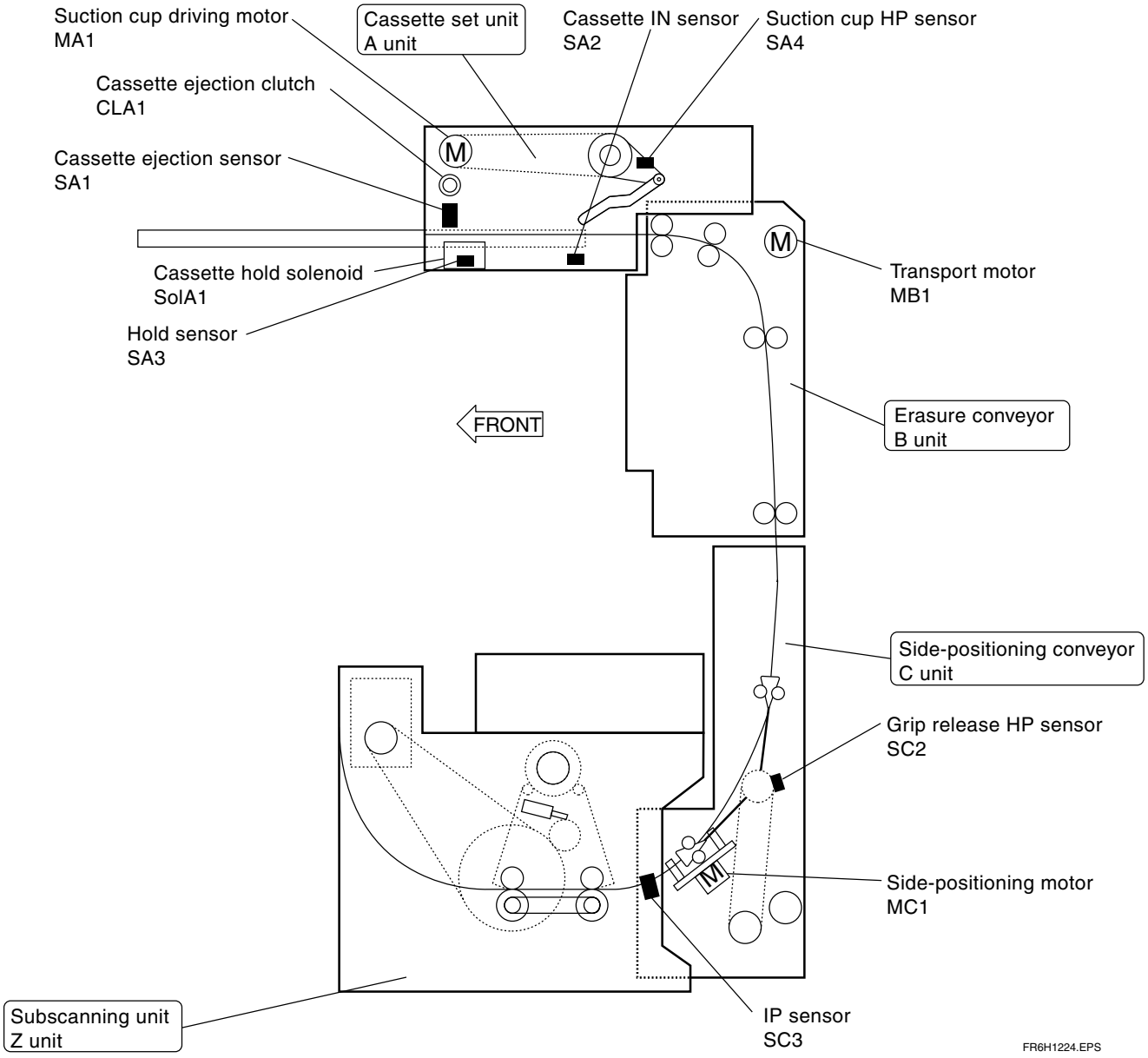
5.1.9 Remaining IP Processing

<Fig. 1 Remaining IP Processing Flow>




A
5.1.11, Fig. 1
IP stopper protrusion 2
Side-positioning
MC3 [PC35: CW3000P]: Drive
MB1 [PB23: CW4535P]: Drive
Side-positioning
SC3: Close?
Open (No IP)
Timeout [TC31: within 2.8 sec]
Close
(IP found)
Side-positioning stop
MC1: OFF
MB1: OFF
Side-positioning stop
MC1: OFF
MB1: OFF
5.2.4, Fig. 1
Side-positioning
(secondary erasure)
10306
Initialization side-positioning
IP positioning failure
Cassette IN sensor confirmation
SA2: Close?
Open (Without cassette)
Close
(With cassette)
5.2.1, Fig. 2
Cassette hold release
Message display
11380
Maximum empty cassette setting
SA2: Close?
Close
Open
Message Cancel
Not activated
Remove key: Activation
Activated
NG
5.2.1, Fig. 1
Cassette IN detection
Suction cup movement (HP → load standby)
MA1 [PA18: CW28P]: Drive
5.2.15, Fig. 1
Error handling (recovery IP load)
C
Delay: 50ms
END
FR6H1198.EPS

<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SA1	Cassette ejection sensor	PI (5mm)	Detects that the cassette has been ejected.
SA2	Cassette IN sensor	PI (5mm)	Detects that the cassette has been inserted.
SA3	Cassette hold sensor	PI (5mm)	Detects the cassette hold completion.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SC3	Side-positioning IP sensor	PI (19mm)	IP conveyance sensor
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.
MB1	IP transport motor	Pulse motor	Conveys the IP.
MC1	Side-positioning motor	Pulse motor	Drives the side-positioning mechanism.
SolA1	Cassette hold SOL	Power-down solenoid	Retreats the cassette hold pin when turned ON.
CLA1	Cassette ejection clutch	Clutch	

TR6H1087.EPS

<Sensor ON/OFF Status>

SA1/SA3/SA4

OFF: Open (not blocked) ON: Close (blocked)

SA2

OFF: Open (without cassette) ON: Close (with cassette)

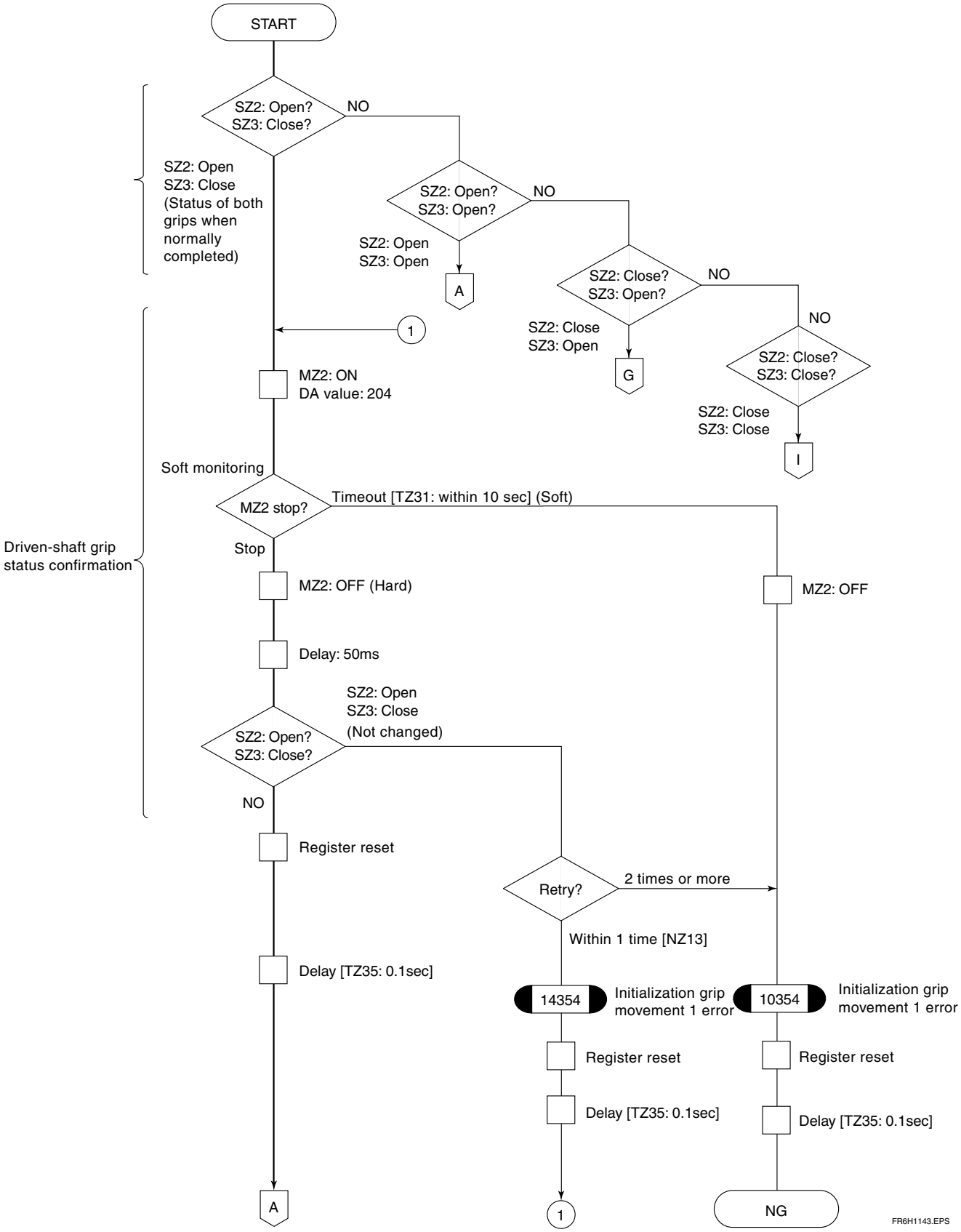
SC3

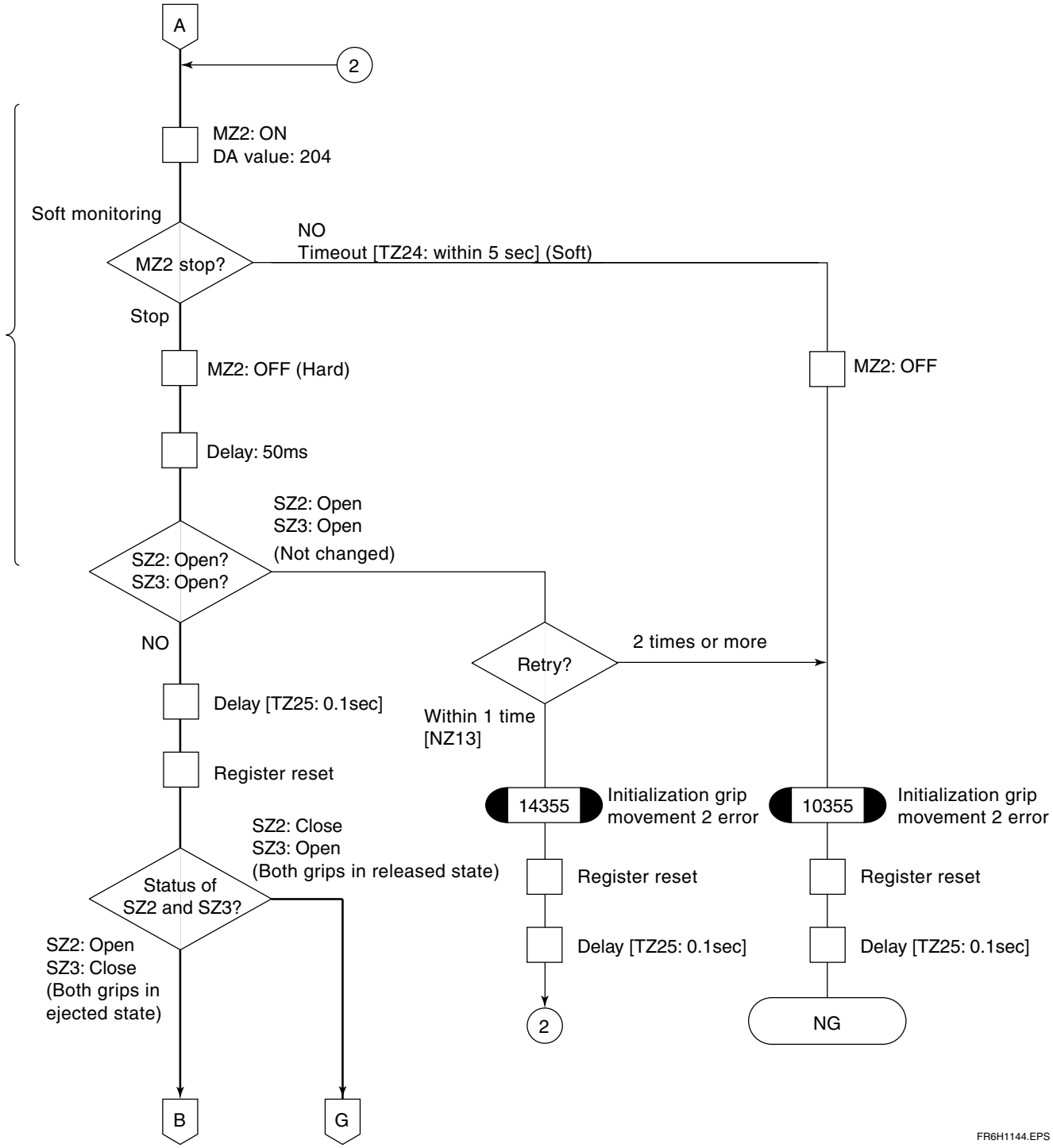
OFF: Open (no IP) ON: Close (IP found)

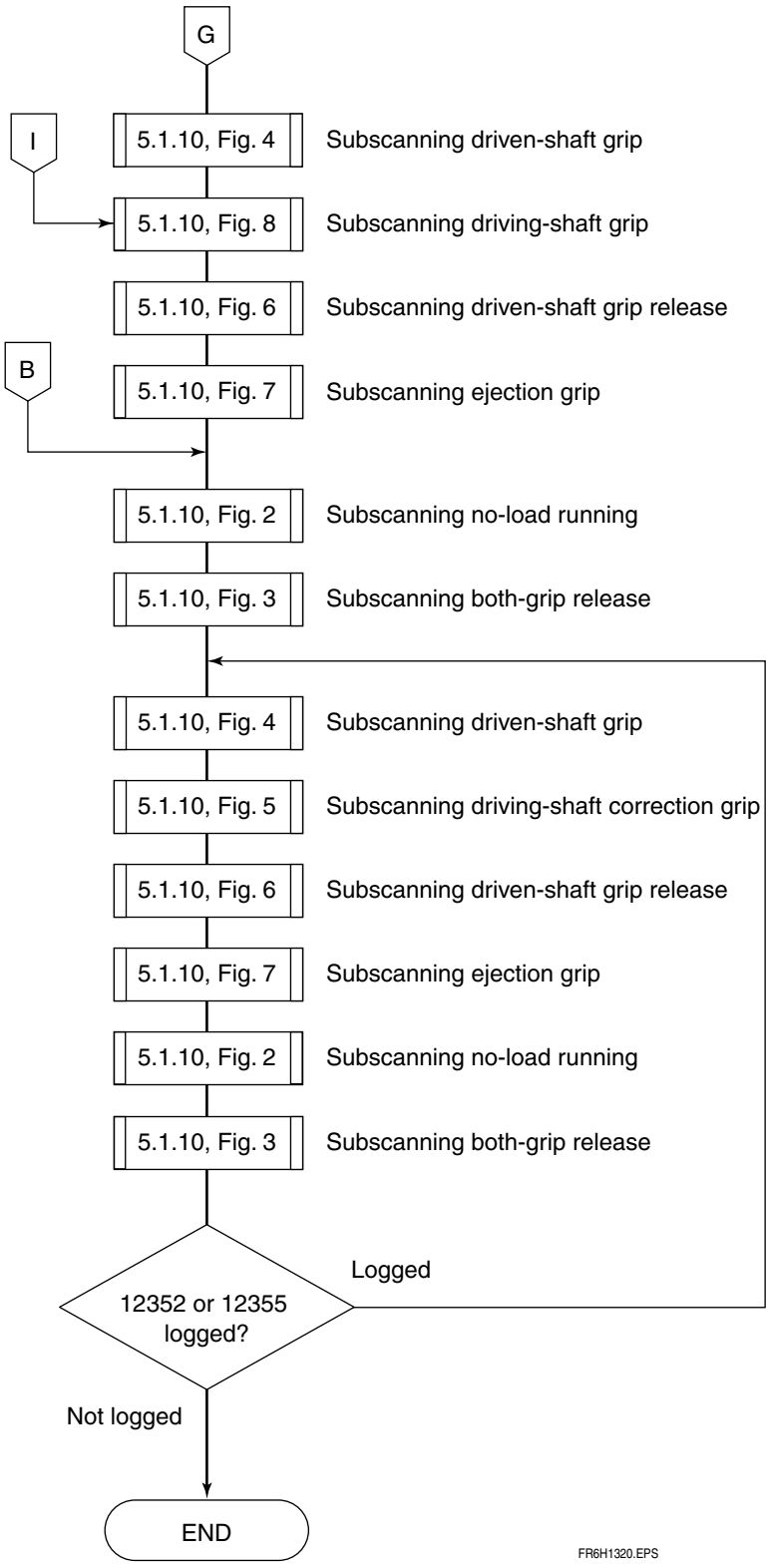
FR6H1252.EPS

5.1.10 Subscanning Grip Home Positioning

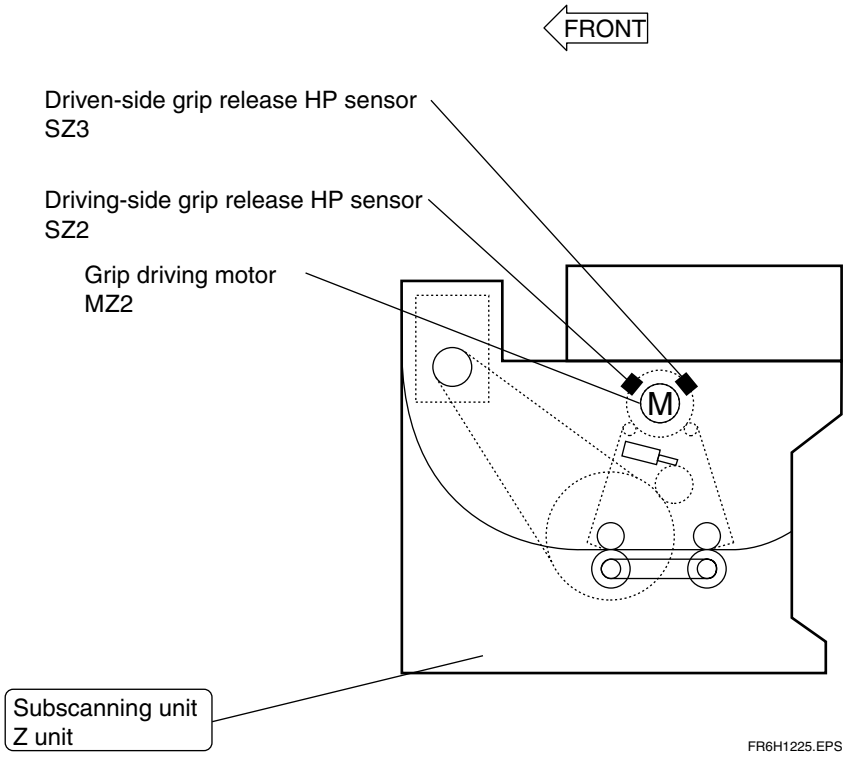
<Fig. 1 Subscanning Grip Home Positioning Flow>




A
2
MZ2: ON
DA value: 204
Soft monitoring
MZ2 stop?
NO
Timeout [TZ24: within 5 sec] (Soft)
Stop
MZ2: OFF (Hard)
MZ2: OFF
Delay: 50ms
SZ2: Open
SZ3: Open
(Not changed)
SZ2: Open?
SZ3: Open?
NO
Retry?
2 times or more
Delay [TZ25: 0.1sec]
Within 1 time
[NZ13]
Register reset
14355
Initialization grip
movement 2 error
10355
Initialization grip
movement 2 error
SZ2: Close
SZ3: Open
(Both grips in released state)
Register reset
Register reset
Status of
SZ2 and SZ3?
Delay [TZ25: 0.1sec]
Delay [TZ25: 0.1sec]
SZ2: Open
SZ3: Close
(Both grips in
ejected state)
2
NG
B
G
FR6H1144.EPS


G
I
5.1.10, Fig. 4
Subscanning driven-shaft grip
5.1.10, Fig. 8
Subscanning driving-shaft grip
5.1.10, Fig. 6
Subscanning driven-shaft grip release
B
5.1.10, Fig. 7
Subscanning ejection grip
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
5.1.10, Fig. 4
Subscanning driven-shaft grip
5.1.10, Fig. 5
Subscanning driving-shaft correction grip
5.1.10, Fig. 6
Subscanning driven-shaft grip release
5.1.10, Fig. 7
Subscanning ejection grip
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
12352 or 12355 logged?
Logged
Not logged
END
FR6H1320.EPS

<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).

TR6H1074.EPS

<Sensor ON/OFF Status>

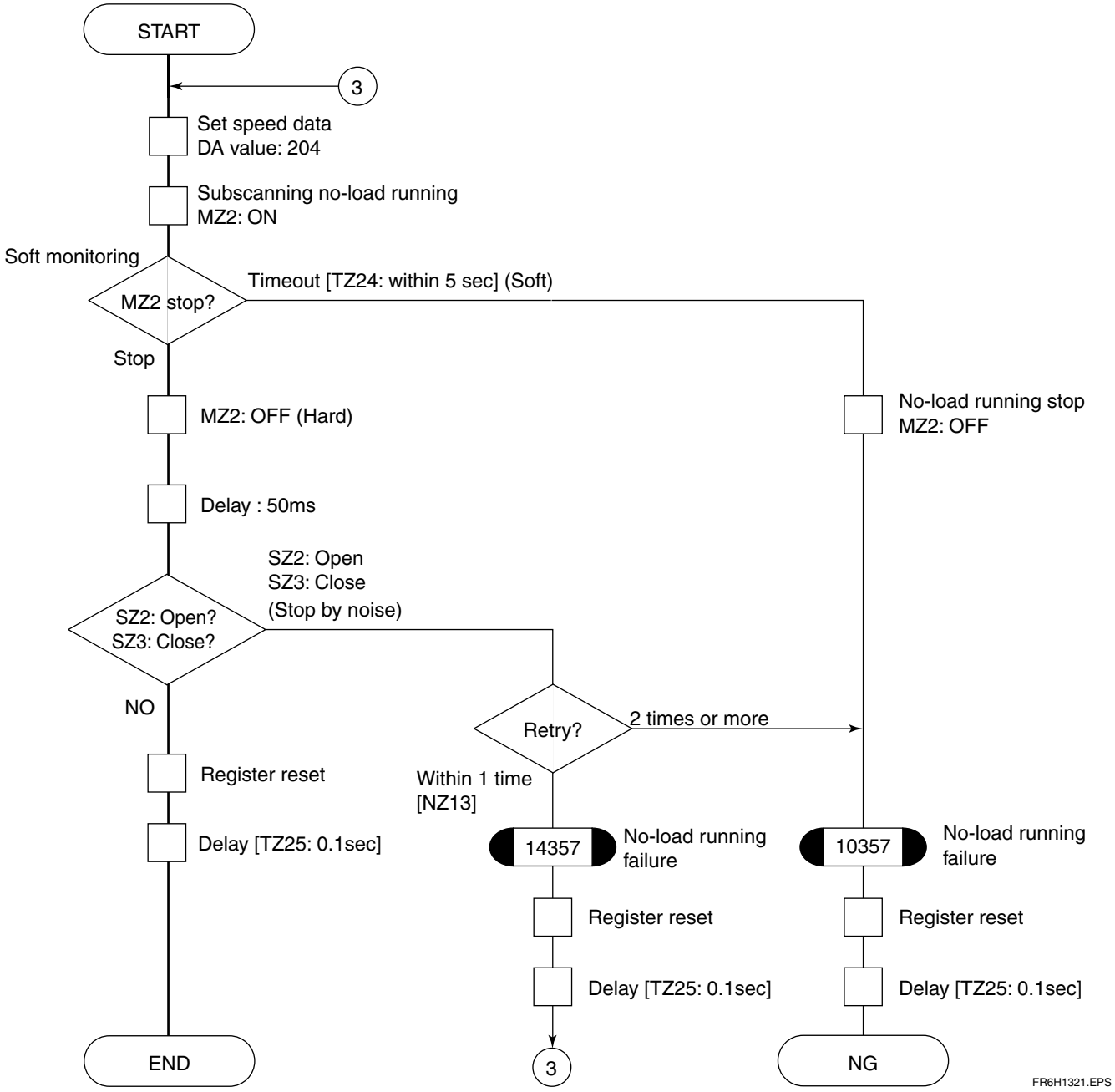
SC3/SB1

OFF: Open (no IP)

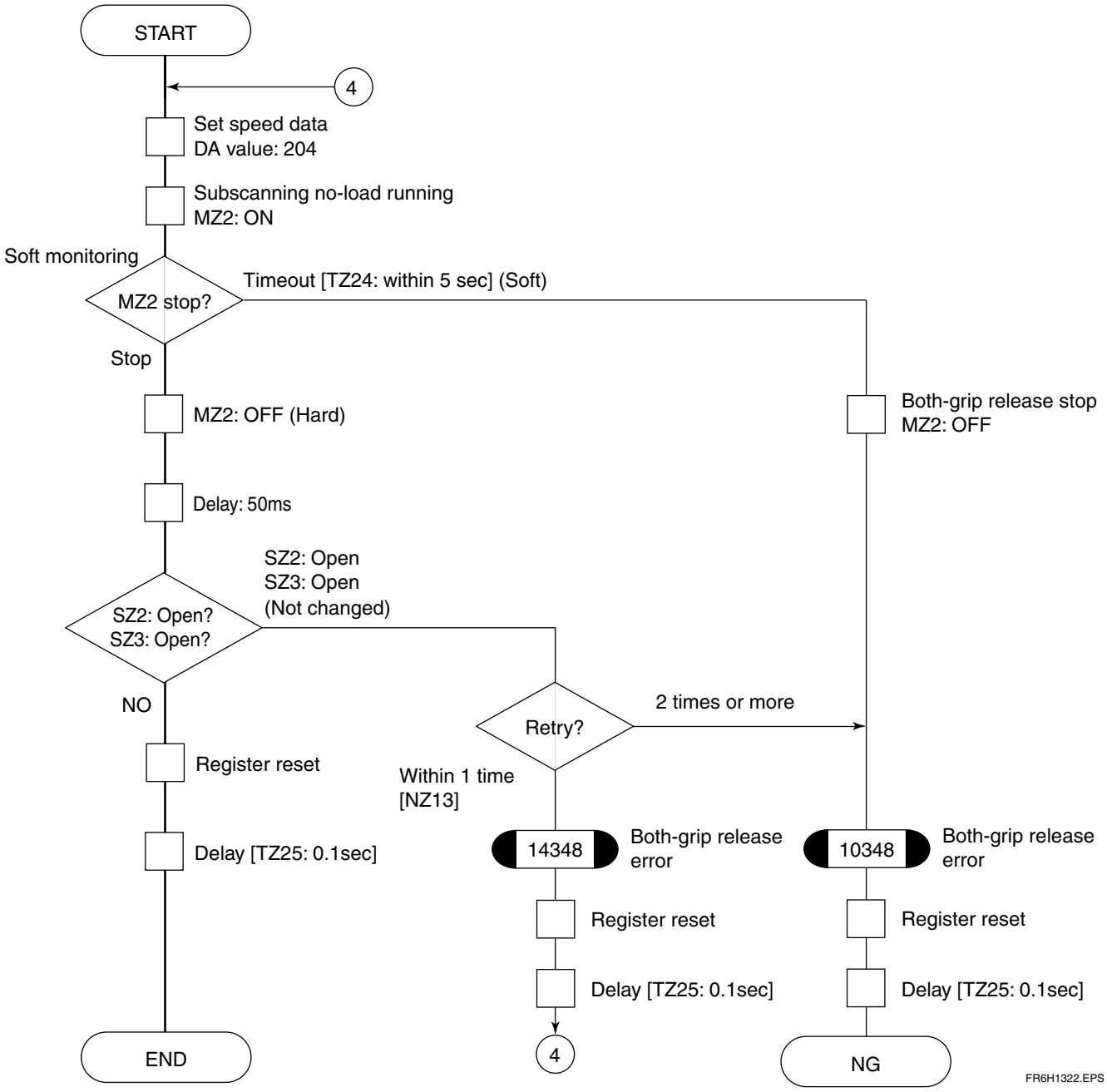
ON: Close (IP found)

FR6H1255.EPS

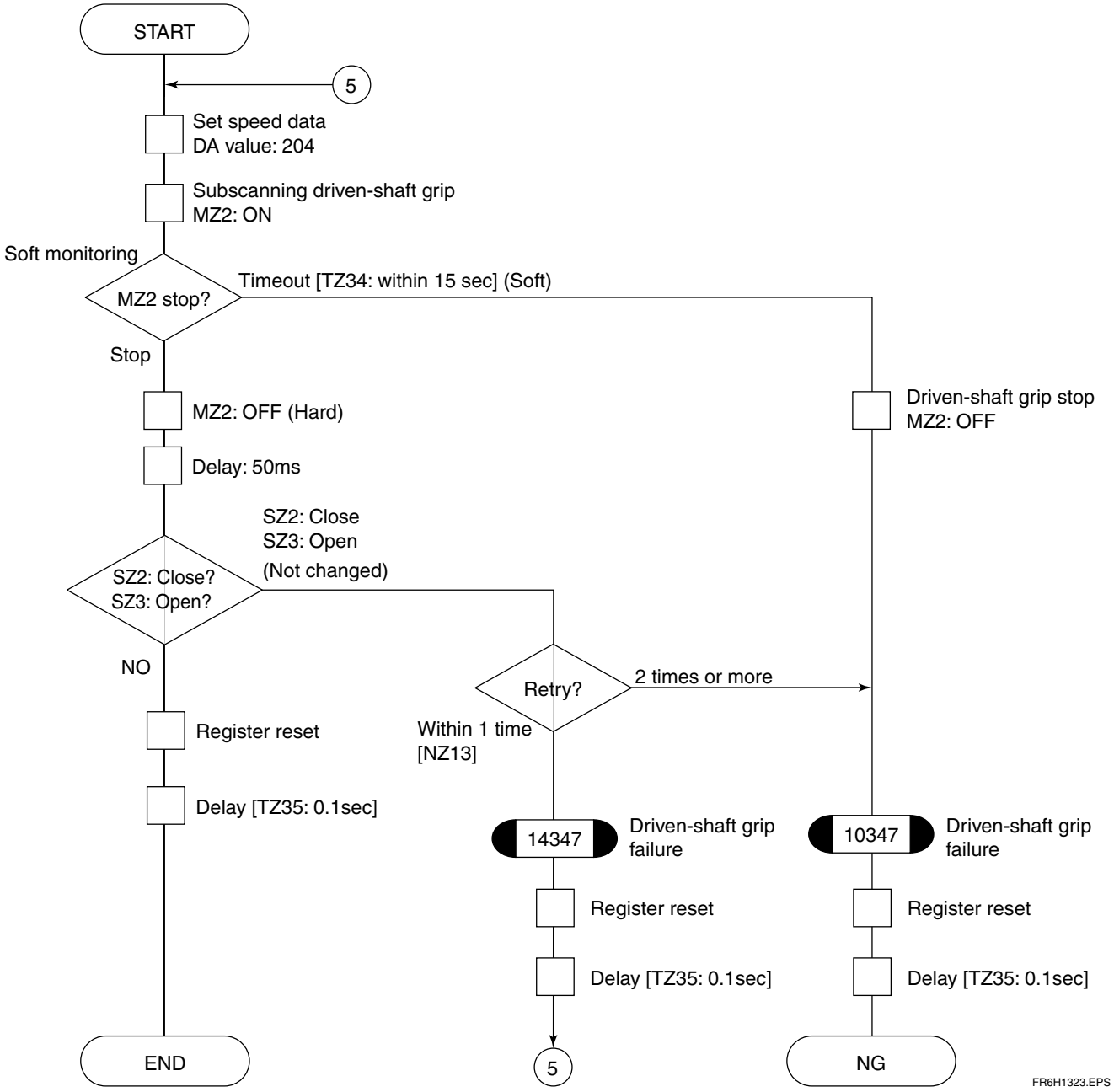
<Fig. 2 Subscanning No-Load Running Flow>



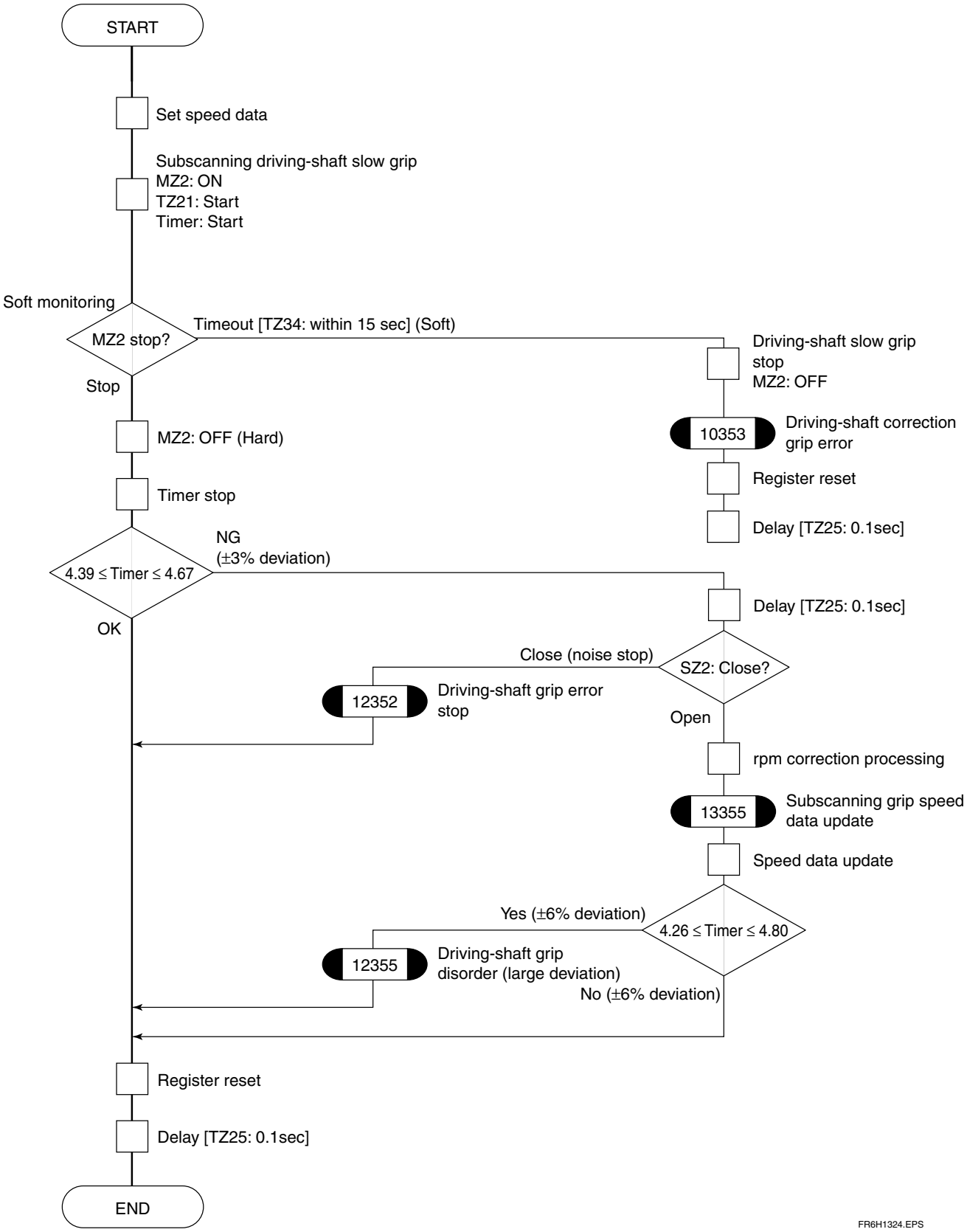
<Fig. 3 Subscanning Both-Grip Release Flow>



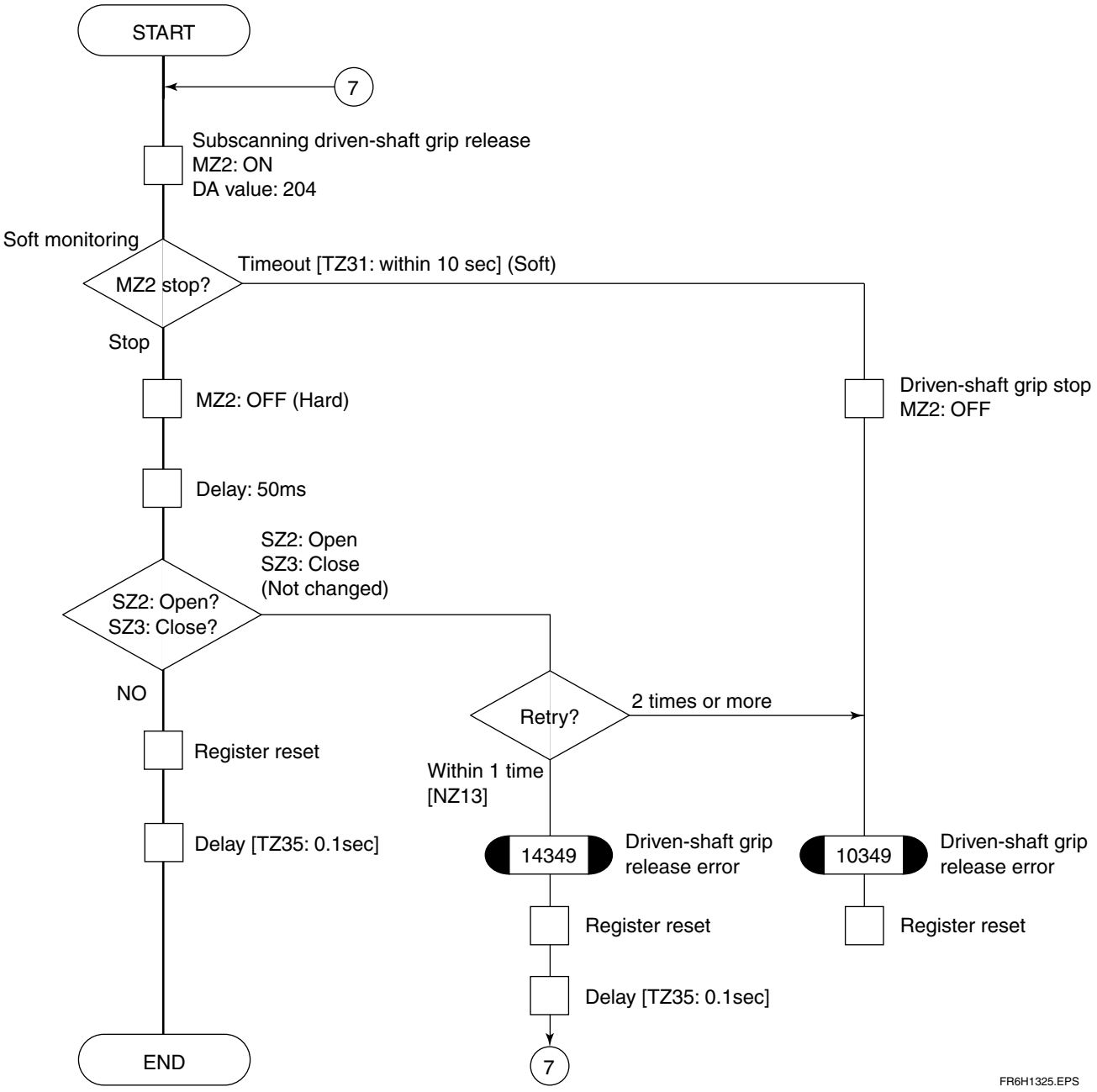
<Fig. 4 Subscanning Driven-Shaft Grip Flow>



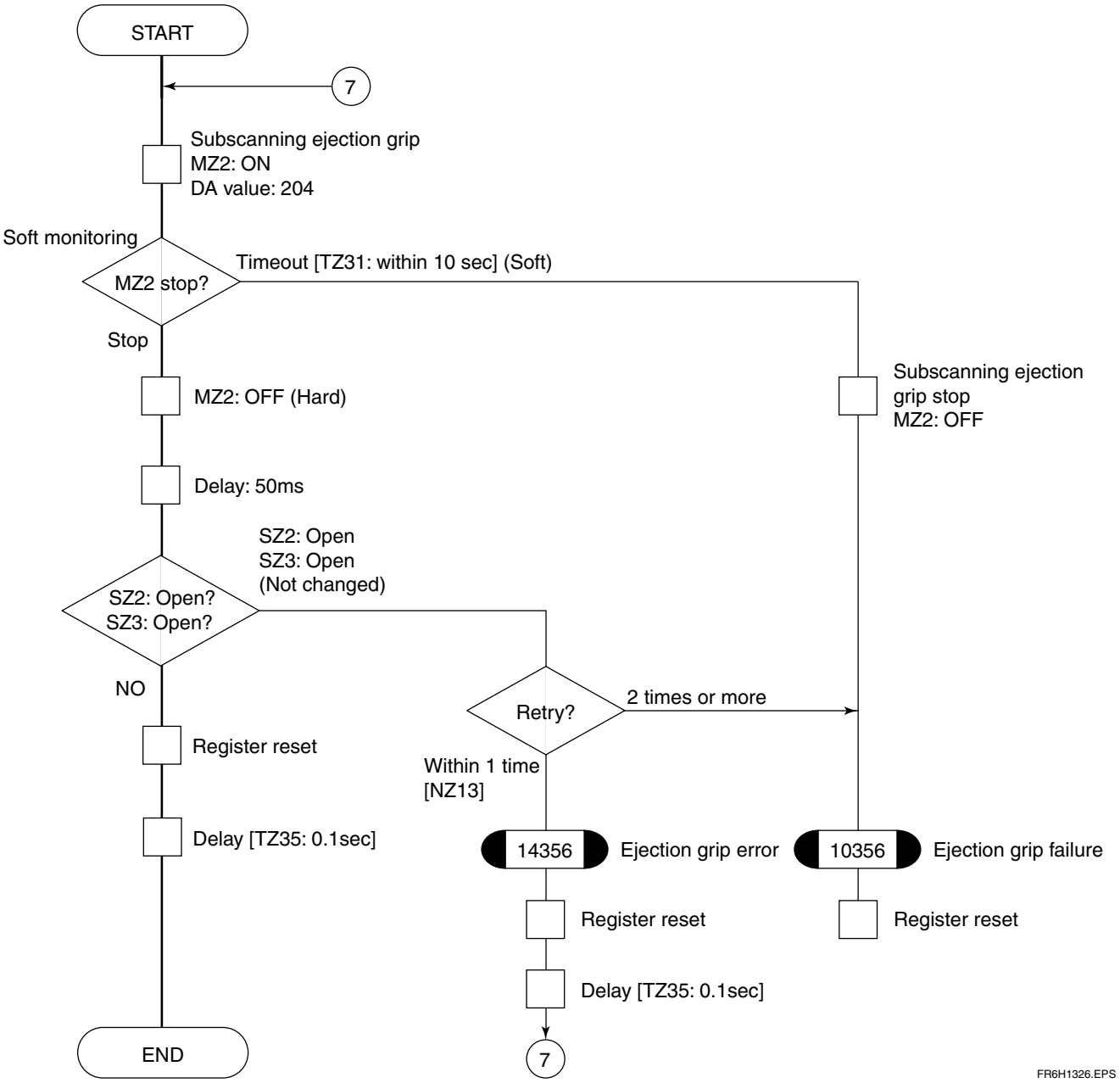
<Fig. 5 Subscanning Driving-Shaft Correction Grip Flow>



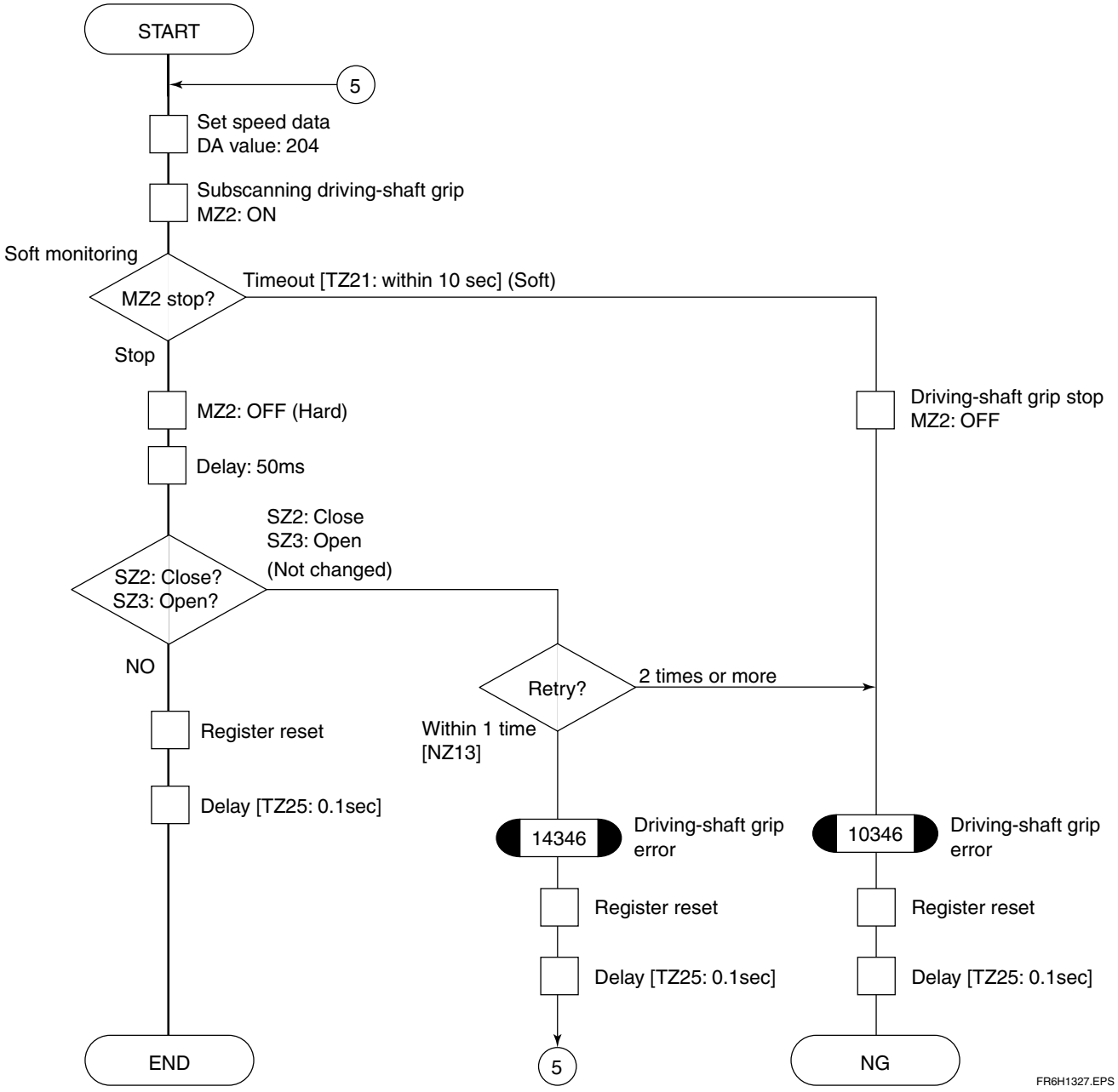
<Fig. 6 Subscanning Driven-Shaft Grip Release Flow>



<Fig. 7 Subscanning Ejection Grip Flow>



<Fig. 8 Subscanning Driving-Shaft Grip Flow>



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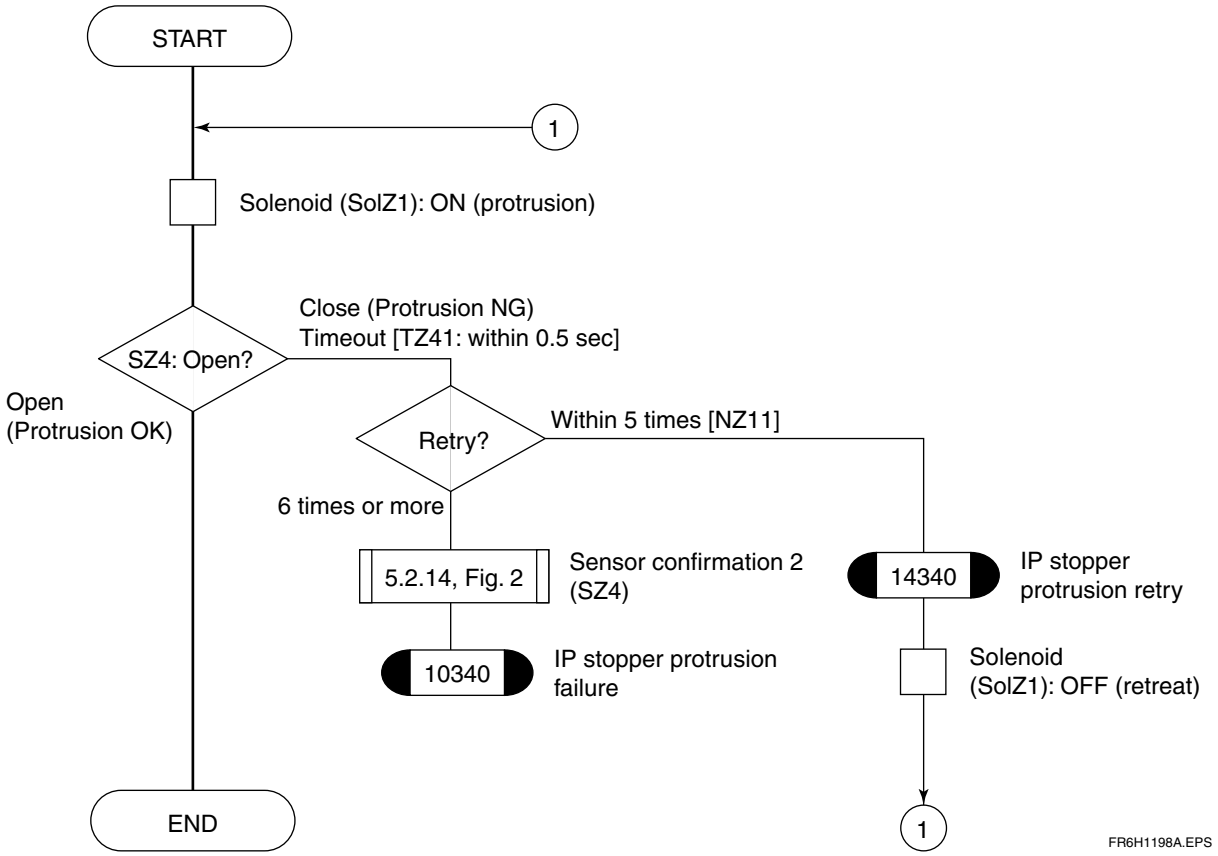
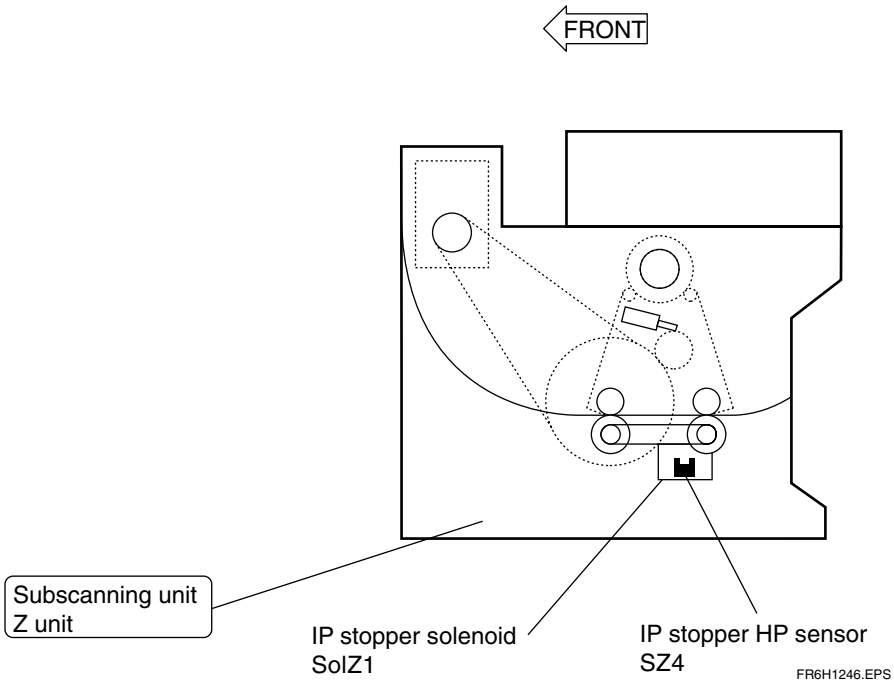
5.1.11 IP Stopper Protrusion 2

<Fig. 1 IP Stopper Protrusion 2 Flow>



<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.

TR6H1072.EPS

<Sensor ON/OFF Status>

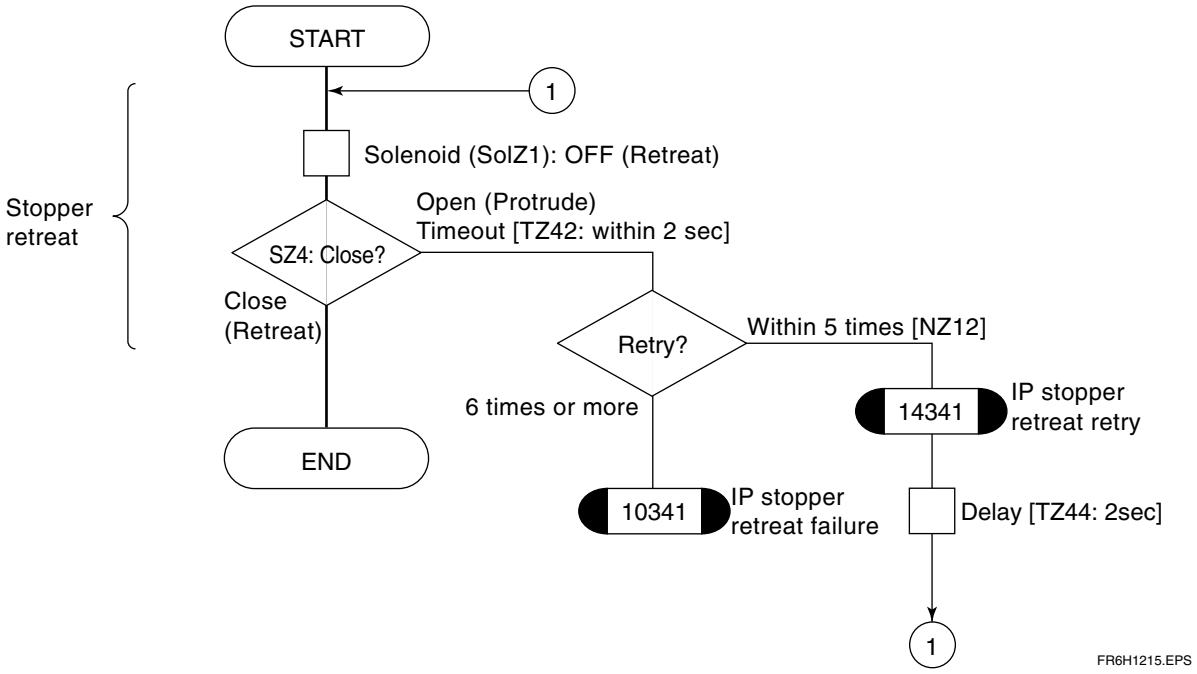
SZ4

OFF: Open (not blocked) ON: Close (blocked)

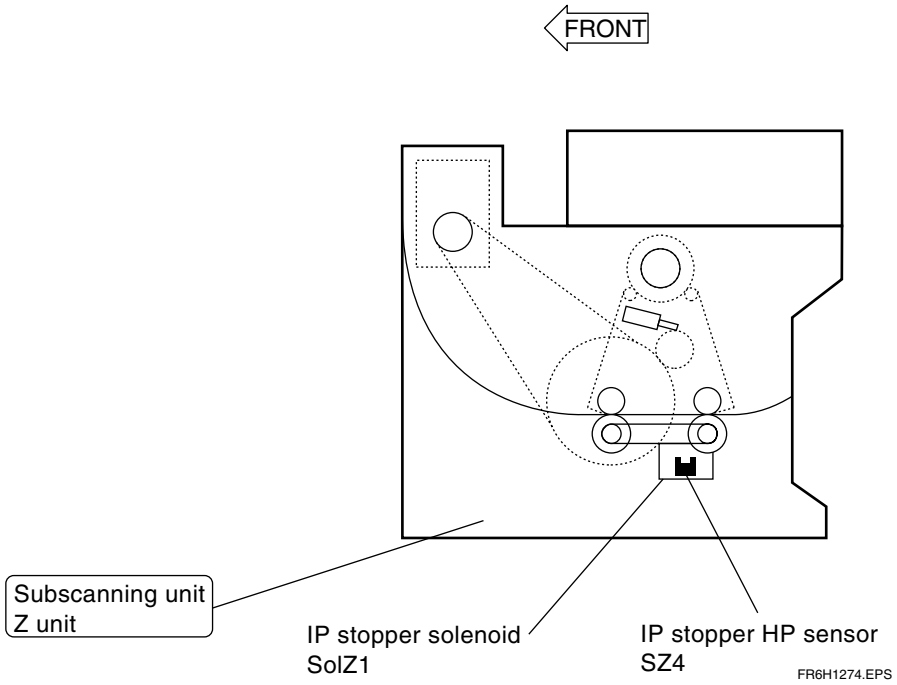
FR6H1272.EPS

5.1.12 Stopper Retreat 2

<Fig. 1 Stopper Retreat 2 Flow>



<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.

TR6H1094.EPS

<Sensor ON/OFF Status>

SZ4

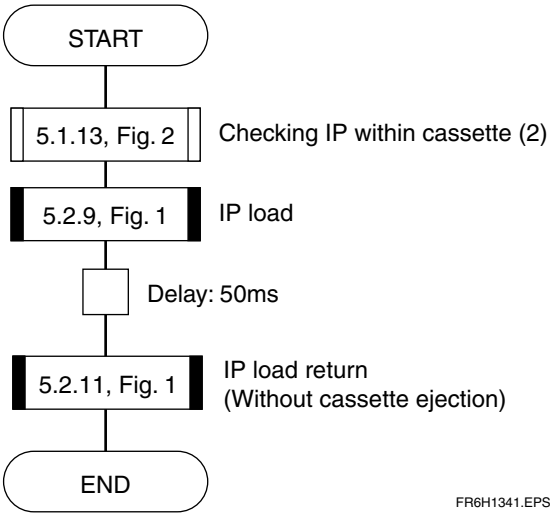
OFF: Open (not blocked)

ON: Close (blocked)

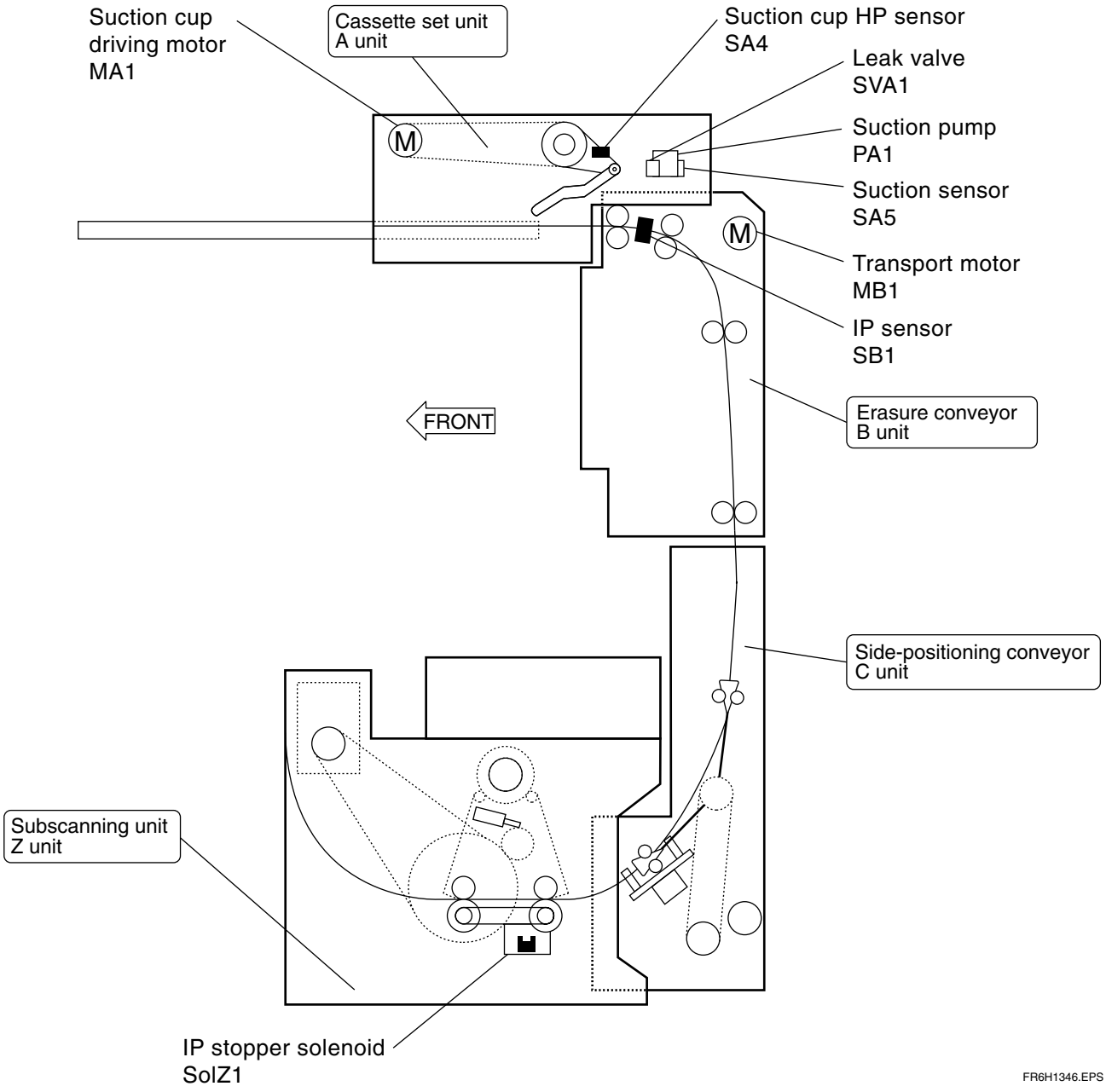
FR6H1272.EPS

5.1.13 Checking IP within Cassette

<Fig. 1 Checking IP within Cassette Flow>



<I/O Locations>

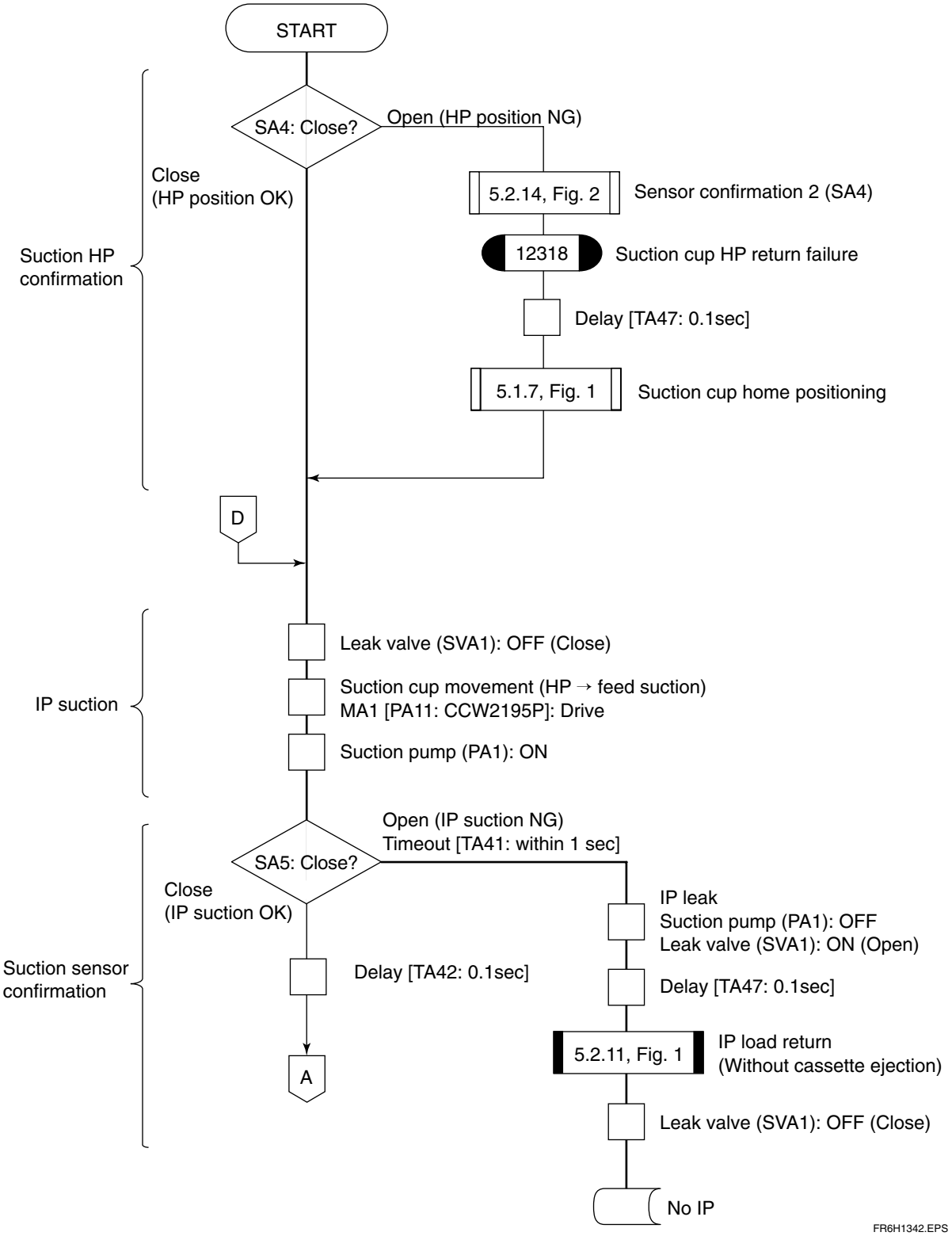


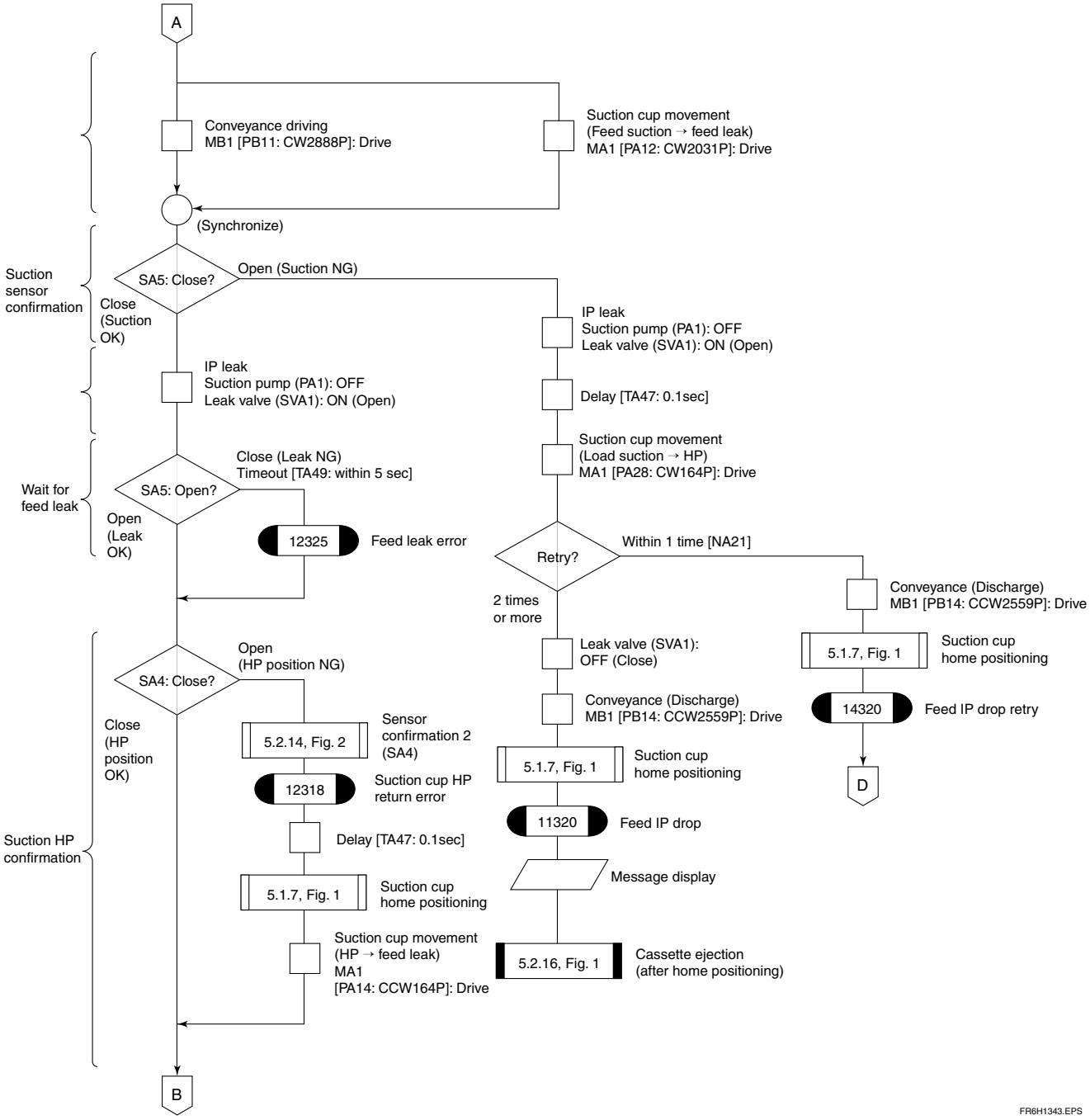
<I/O Table>

Symbol	Name	Type	Function
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.
MB1	IP transport motor	Pulse motor	Conveys the IP.
PA1	IP suction	DC pump	Sucks when turned ON.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SA5	Suction sensor	Suction sensor	Detects that it is sucked.
SB1	Cassette inlet IP sensor	PI (19mm)	IP conveyance sensor
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.
SVA1	IP leak	Solenoid valve	Leaks when turned ON.

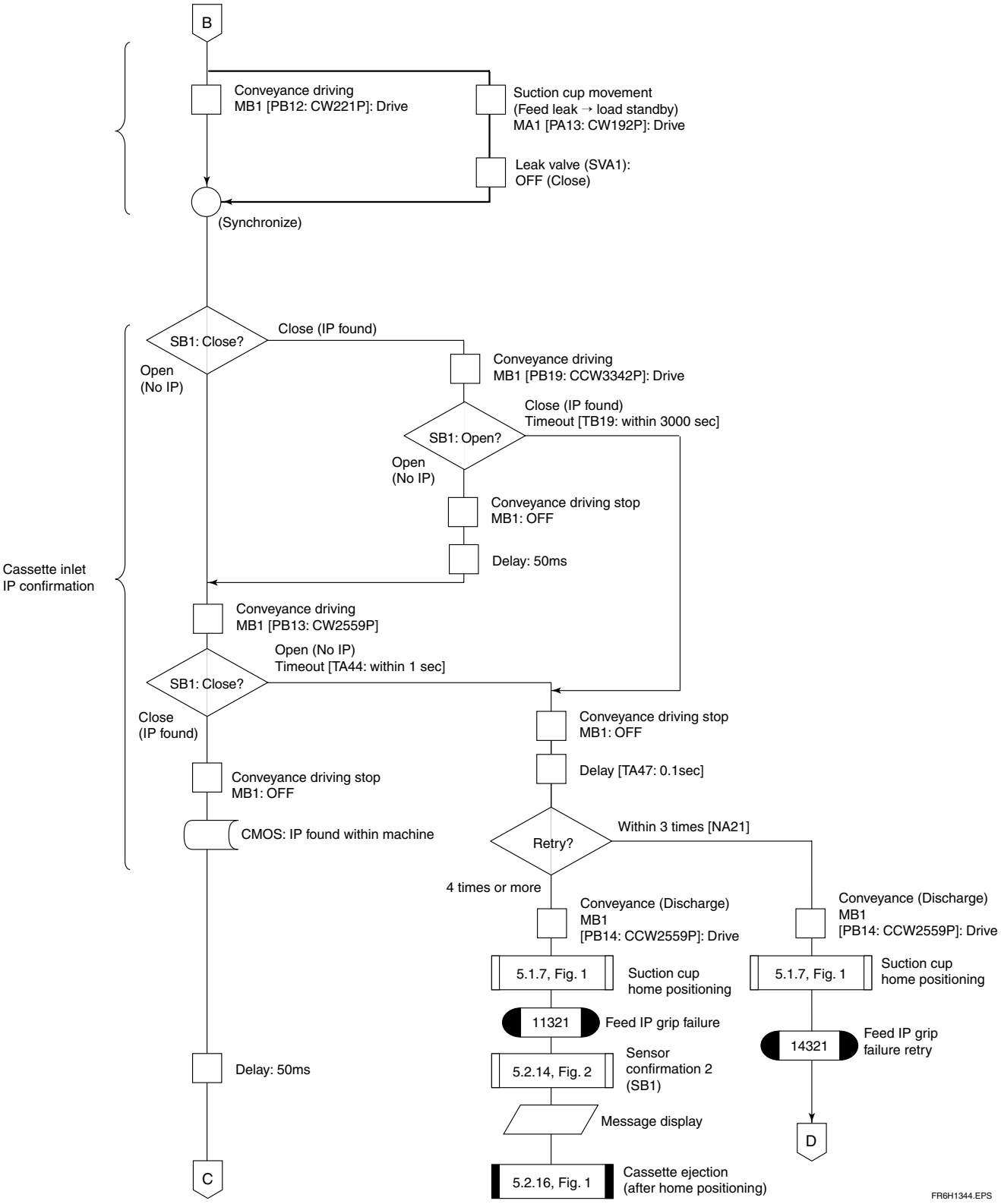
TR6H1096.EPS

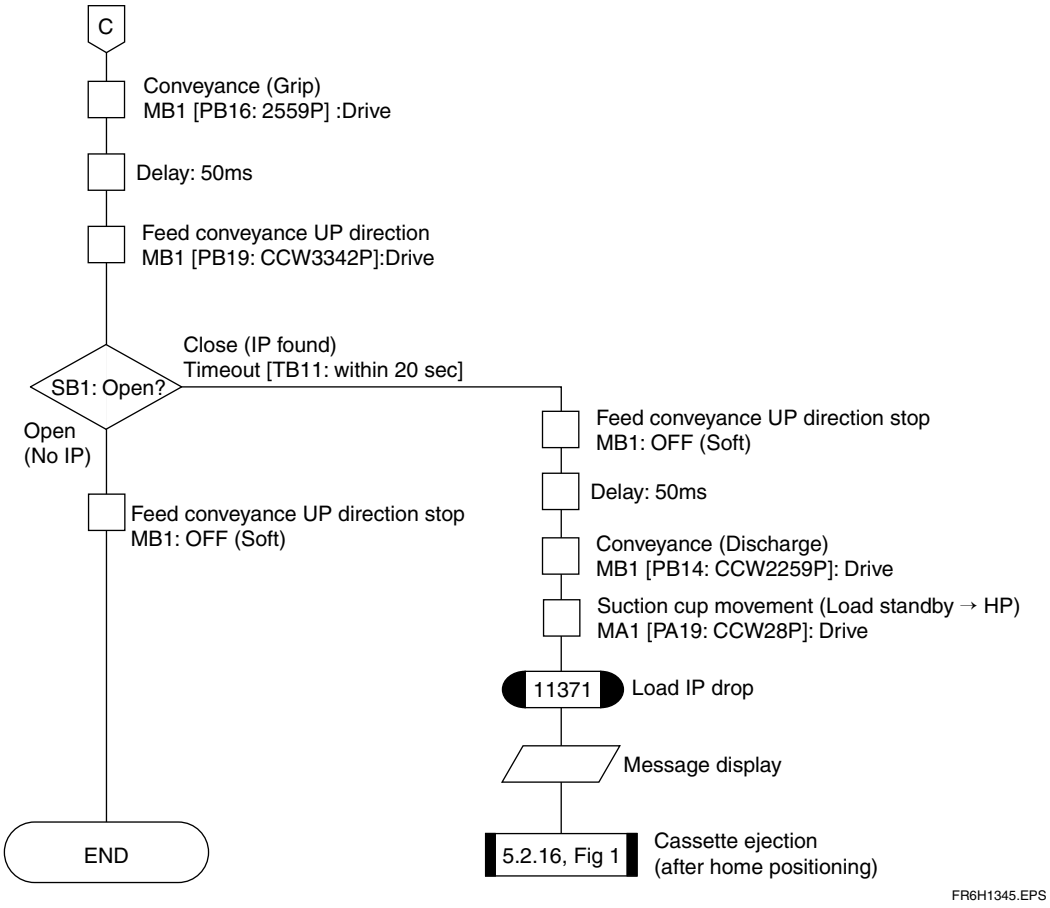
<Fig. 2 Checking IP within Cassette 2>





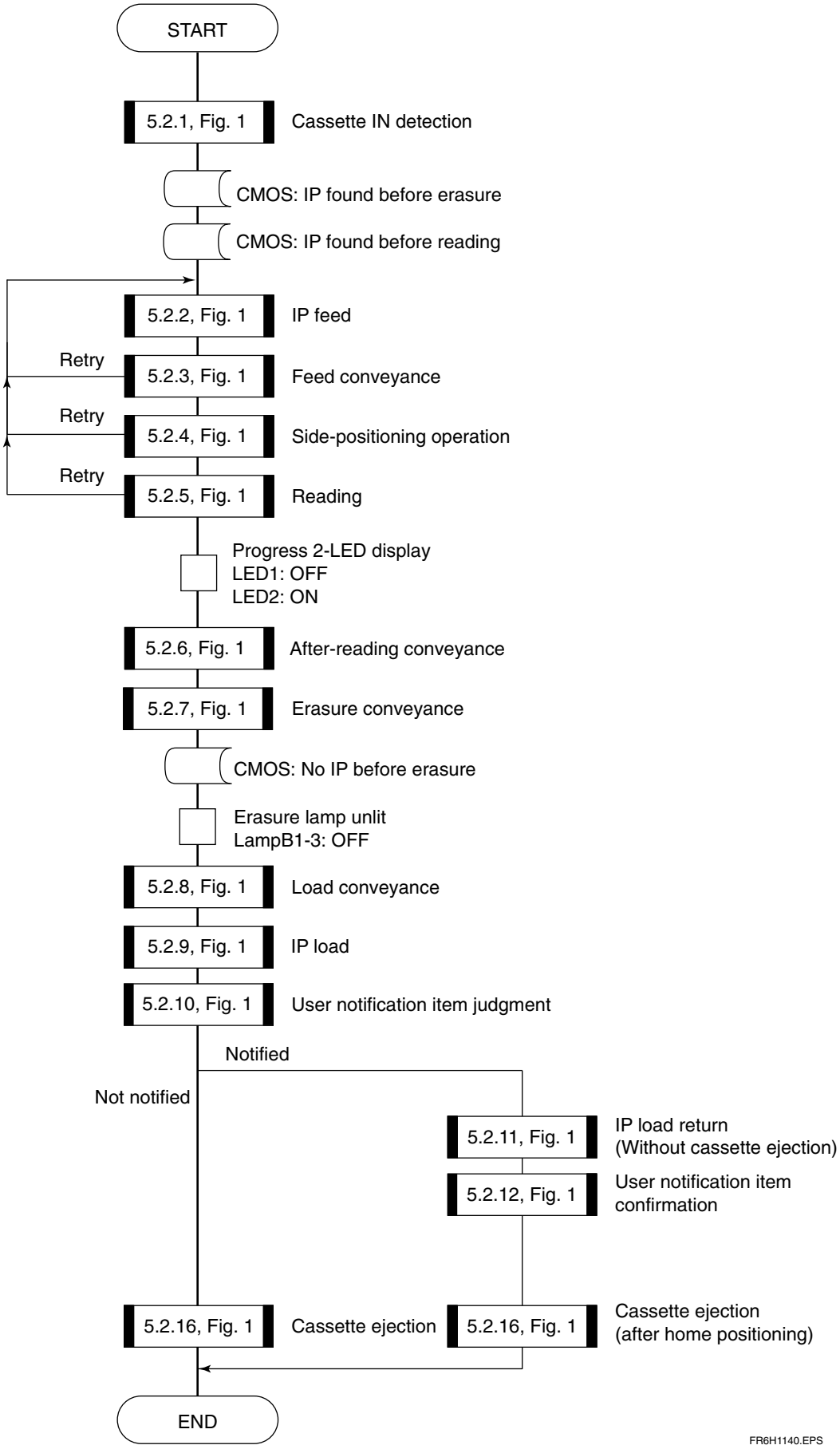
FR6H1343.EPS


B
Conveyance driving
MB1 [PB12: CW221P]: Drive
Suction cup movement
(Feed leak → load standby)
MA1 [PA13: CW192P]: Drive
Leak valve (SVA1):
OFF (Close)
(Synchronize)
SB1: Close?
Close (IP found)
Open
(No IP)
Conveyance driving
MB1 [PB19: CCW3342P]: Drive
Close (IP found)
Timeout [TB19: within 3000 sec]
SB1: Open?
Open
(No IP)
Conveyance driving stop
MB1: OFF
Delay: 50ms
Cassette inlet
IP confirmation
Conveyance driving
MB1 [PB13: CW2559P]
Open (No IP)
Timeout [TA44: within 1 sec]
SB1: Close?
Close
(IP found)
Conveyance driving stop
MB1: OFF
Delay [TA47: 0.1sec]
Conveyance driving stop
MB1: OFF
CMOS: IP found within machine
Retry?
Within 3 times [NA21]
4 times or more
Conveyance (Discharge)
MB1
[PB14: CCW2559P]: Drive
Conveyance (Discharge)
MB1
[PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup
home positioning
5.1.7, Fig. 1
Suction cup
home positioning
11321
Feed IP grip failure
14321
Feed IP grip
failure retry
Delay: 50ms
5.2.14, Fig. 2
Sensor
confirmation 2
(SB1)
Message display
D
C
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
FR6H1344.EPS

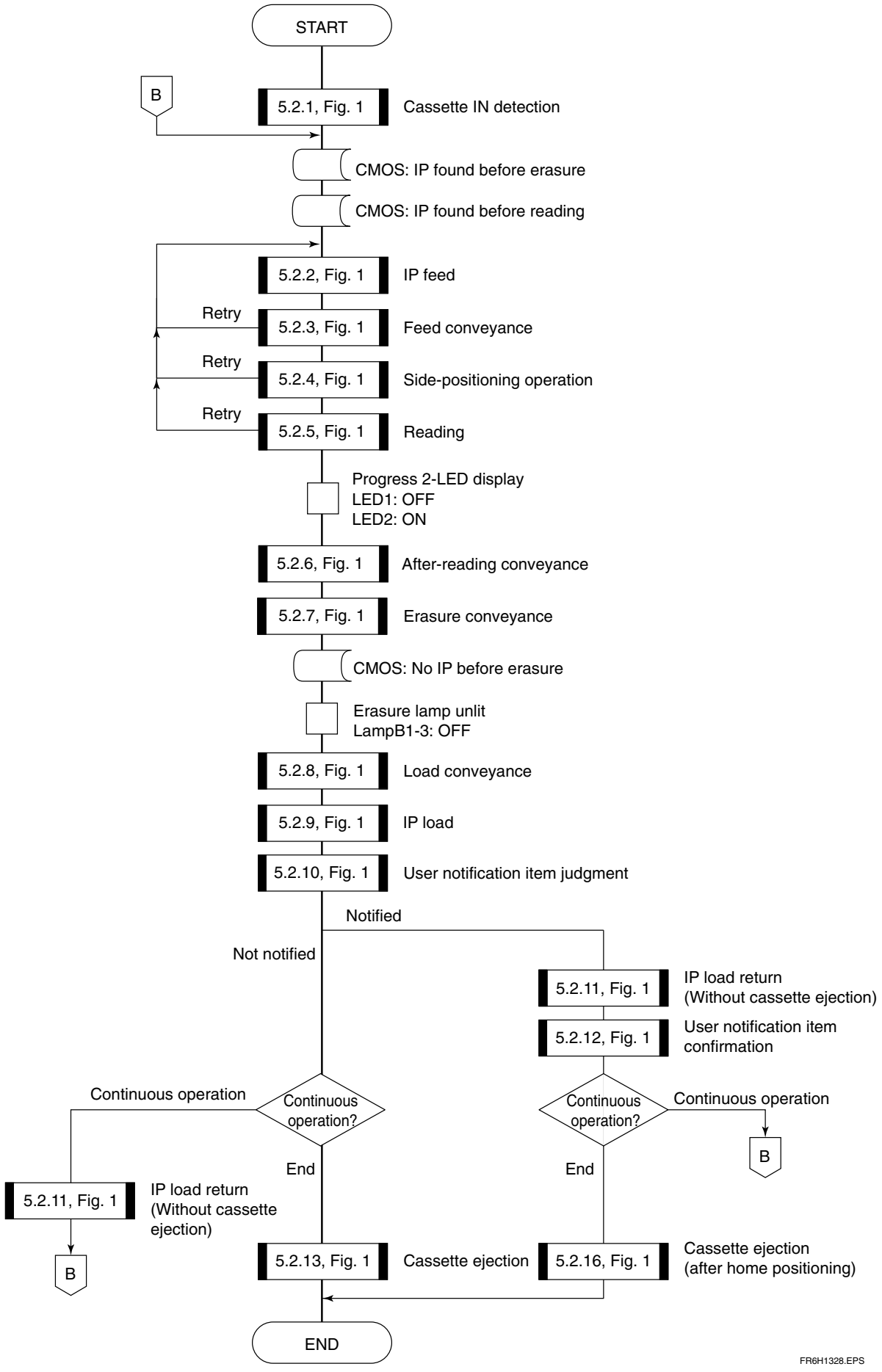

C
Conveyance (Grip)
MB1 [PB16: 2559P] :Drive
Delay: 50ms
Feed conveyance UP direction
MB1 [PB19: CCW3342P]:Drive
SB1: Open?
Close (IP found)
Timeout [TB11: within 20 sec]
Open
(No IP)
Feed conveyance UP direction stop
MB1: OFF (Soft)
END
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2259P]: Drive
Suction cup movement (Load standby → HP)
MA1 [PA19: CCW28P]: Drive
11371
Load IP drop
Message display
5.2.16, Fig 1
Cassette ejection
(after home positioning)
FR6H1345.EPS

5.2 Routine Operation Flow

<Fig. 1 Overall Summary Flow>

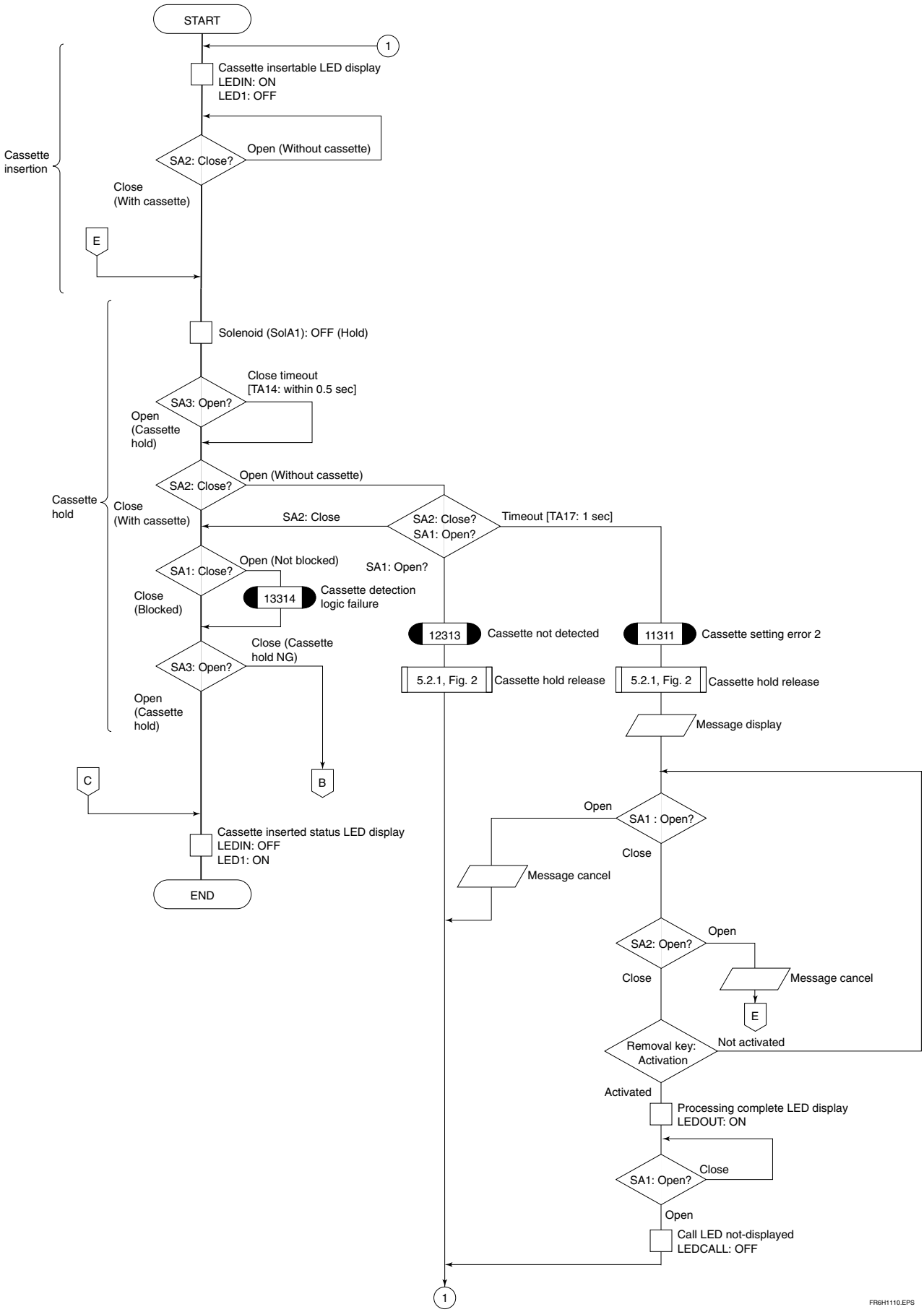


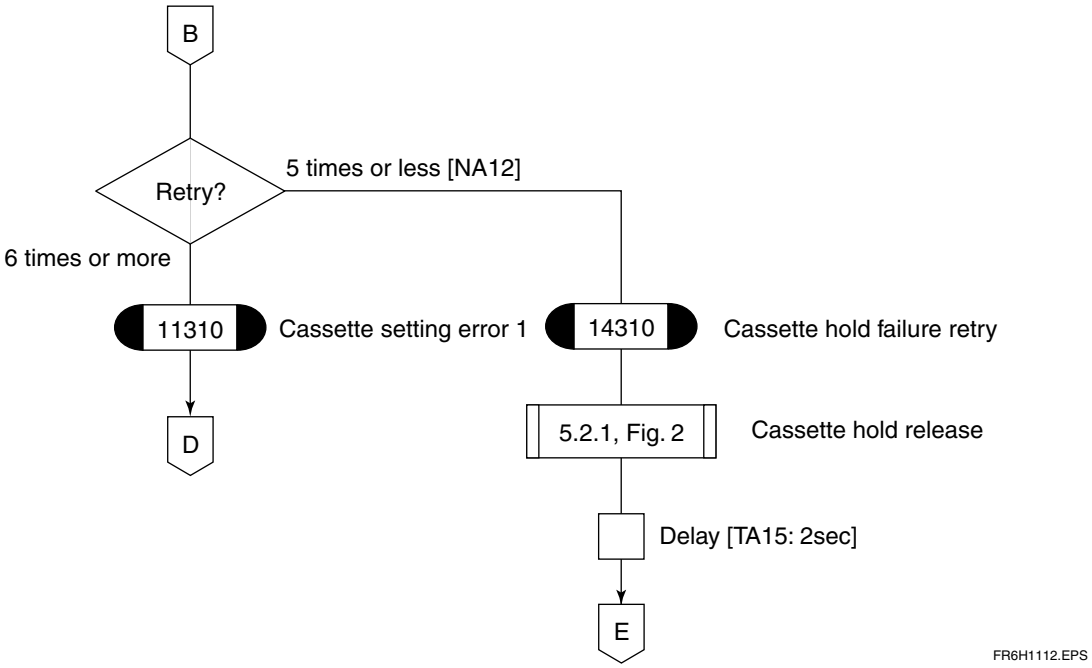
<Fig. 2 For Continuous Conveyance under M-Utility “TEST MODE”>



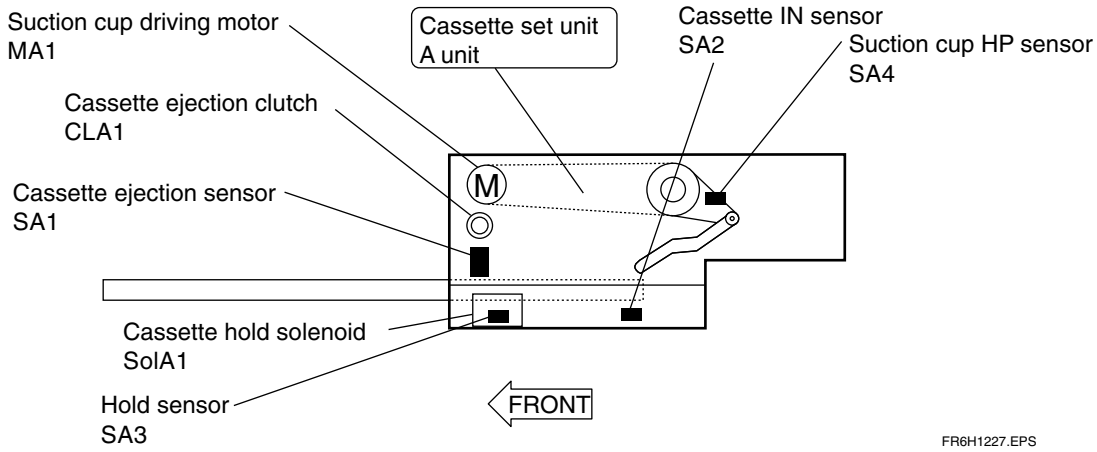
5.2.1 Cassette IN Detection

<Fig. 1 Cassette IN Detection Flow>




B
Retry?
5 times or less [NA12]
6 times or more
11310
Cassette setting error 1
14310
Cassette hold failure retry
D
5.2.1, Fig. 2
Cassette hold release
Delay [TA15: 2sec]
E
FR6H1112.EPS

<I/O Locations>



FR6H1227.EPS

<I/O Table>

Symbol	Name	Type	Function
SA1	Cassette ejection sensor	PI (5mm)	Detects that the cassette has been ejected.
SA2	Cassette IN sensor	PI (5mm)	Detects that the cassette has been inserted.
SA3	Cassette hold sensor	PI (5mm)	Detects the cassette hold completion.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SolA1	Cassette hold SOL	Power-down solenoid	Retreats the cassette hold pin when turned ON.
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.
LEDIN	Cassette insertable	LED	Indicates that the cassette can be inserted.
LED1	Progress 1	LED	Indicates that the progress is "1"
CLA1	Cassette ejection clutch	Clutch	Power connection for actuating cassette ejection operation.

TR6H1005.EPS

<Sensor ON/OFF Status>

SA1/SA3/SA4

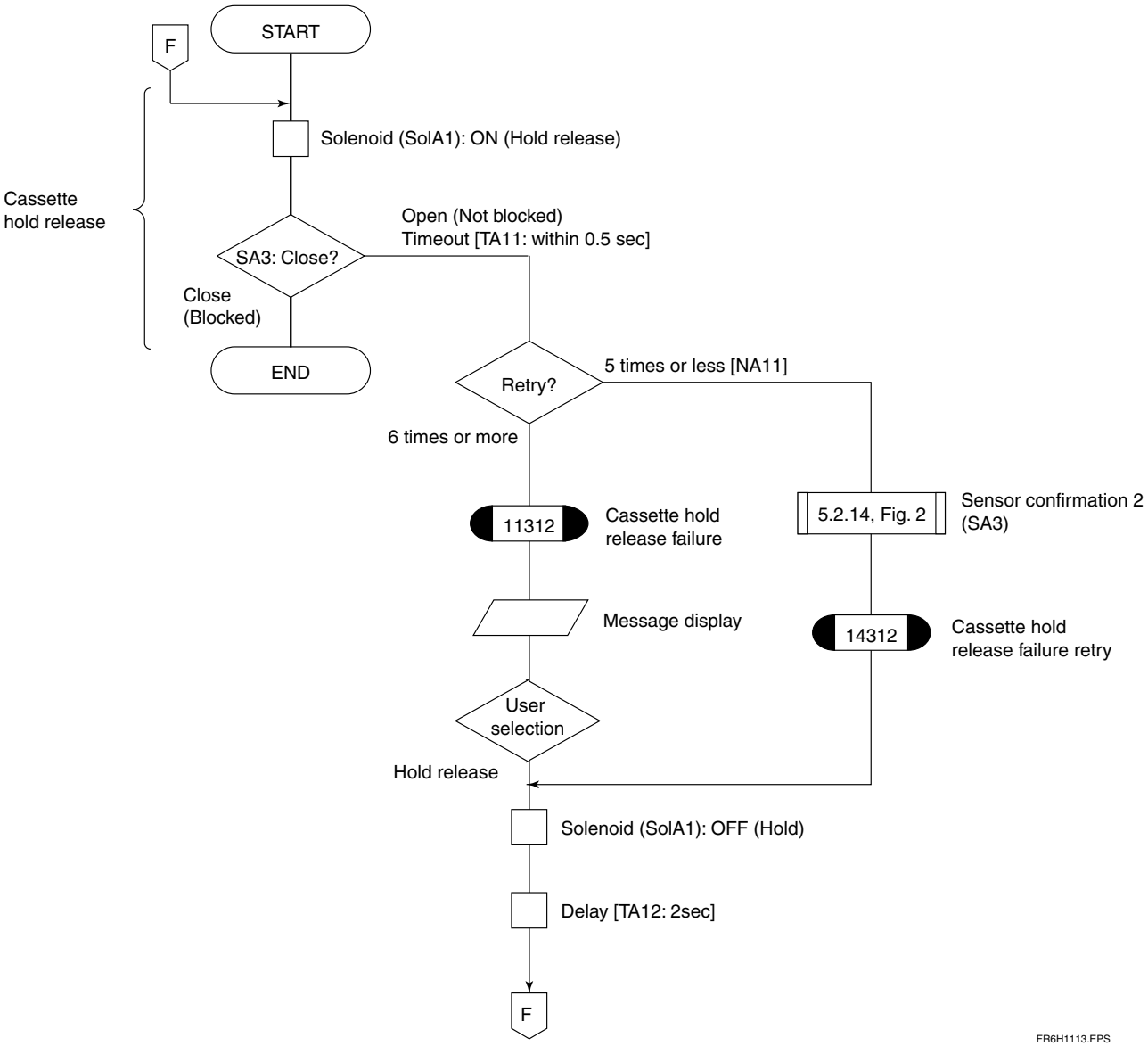
OFF: Open (not blocked) ON: Close (blocked)

SA2

OFF: Open (without cassette) ON: Close (with cassette)

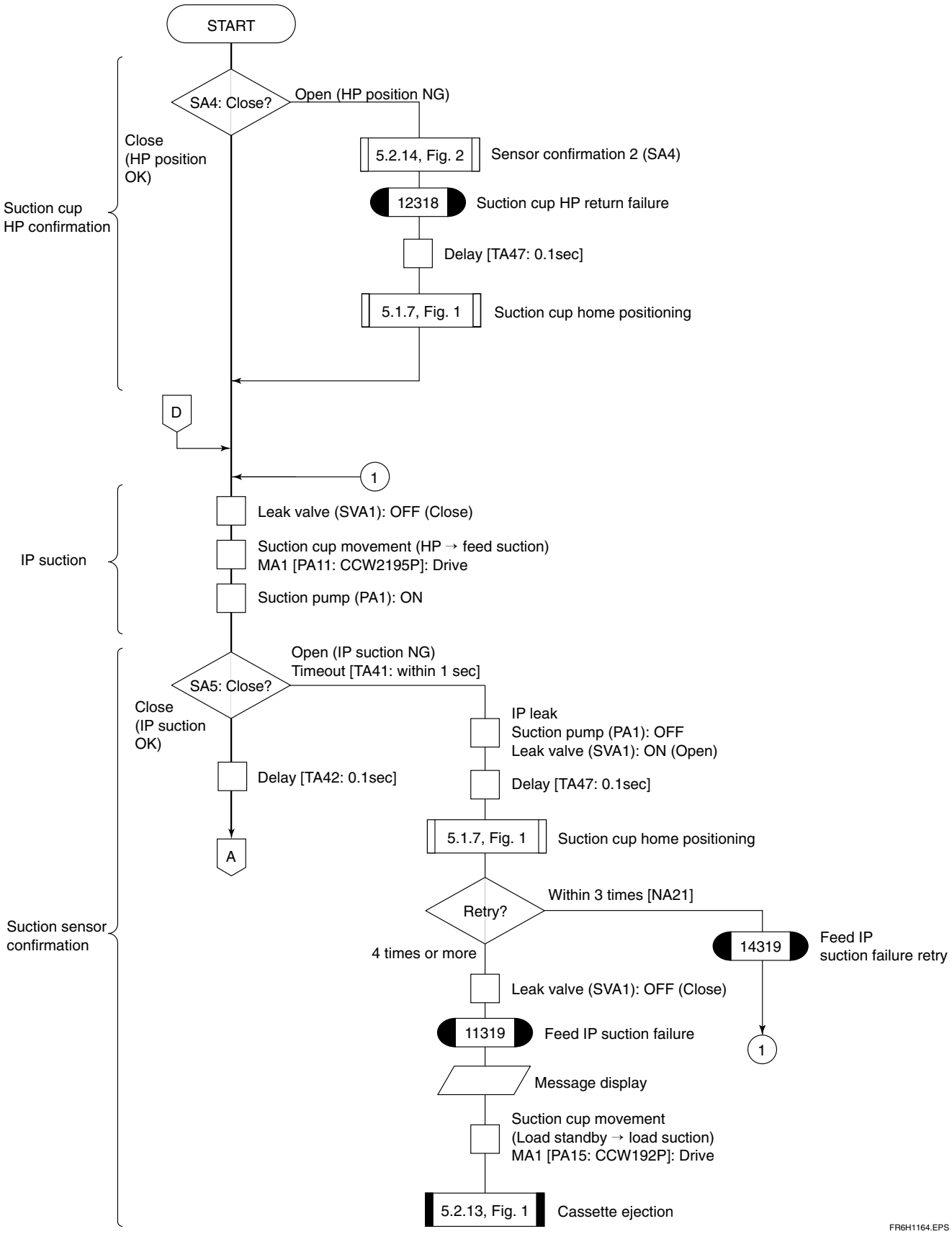
FR6H1268.EPS

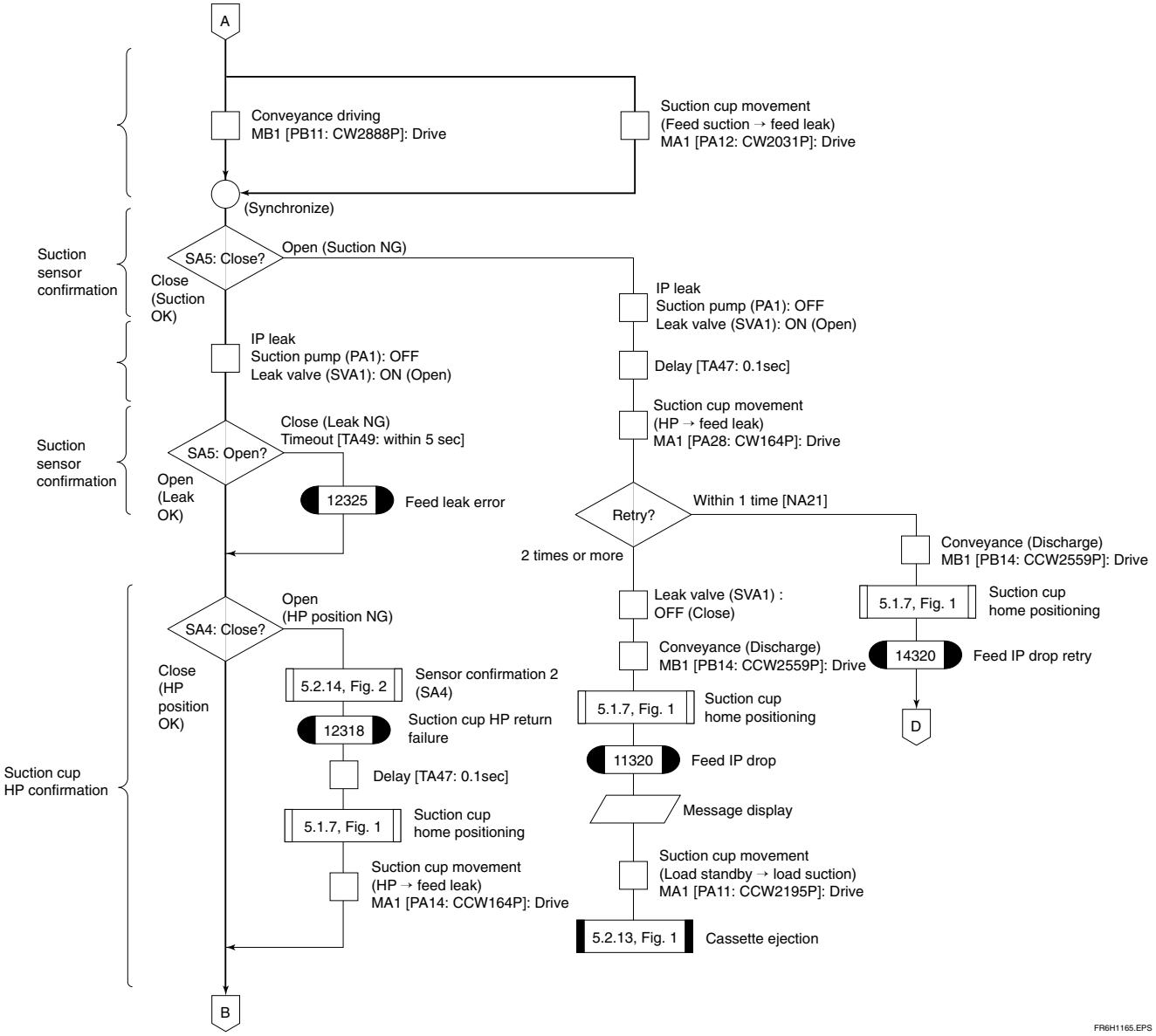
<Fig. 2 Cassette Hold Release Flow>

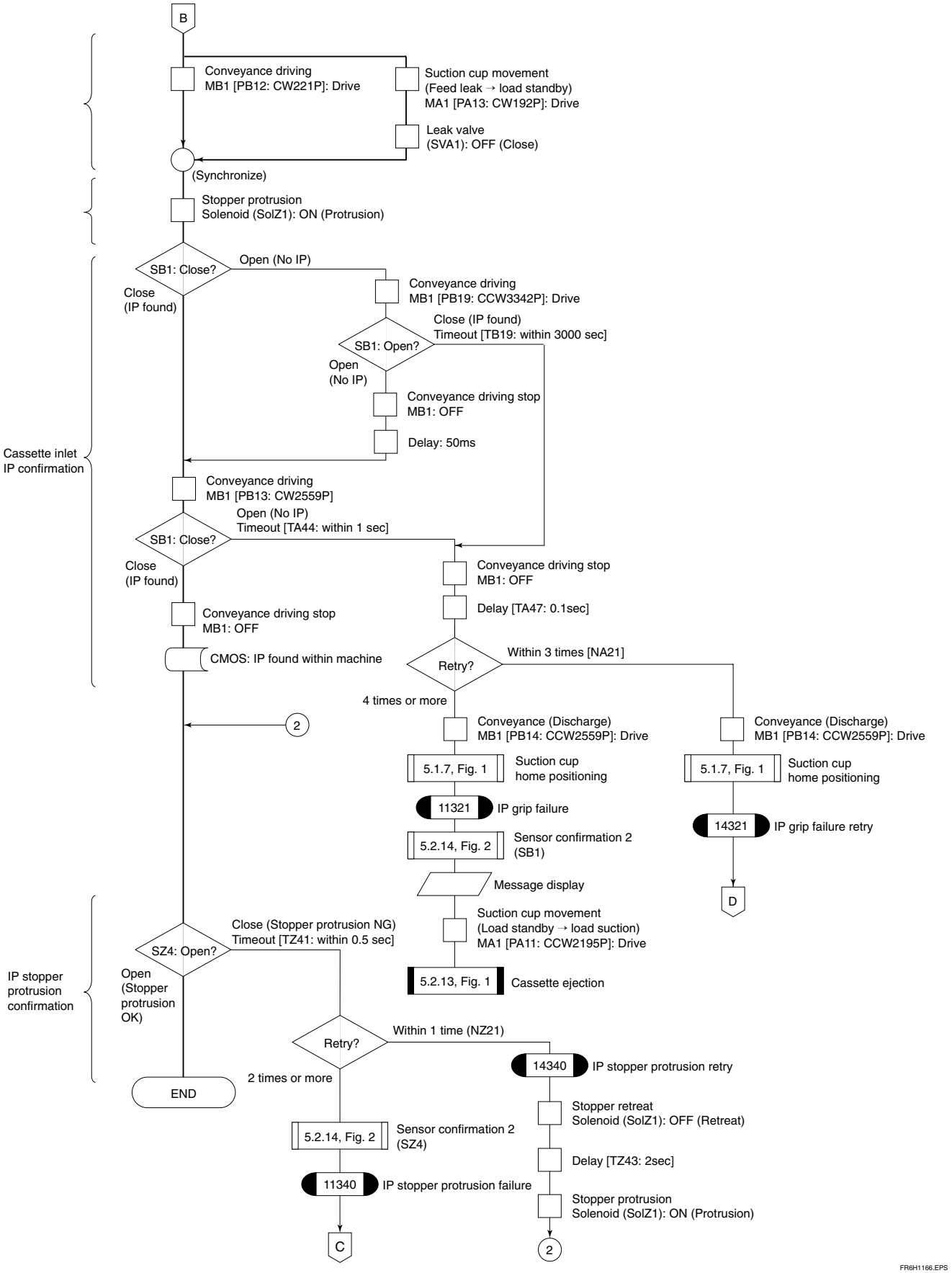


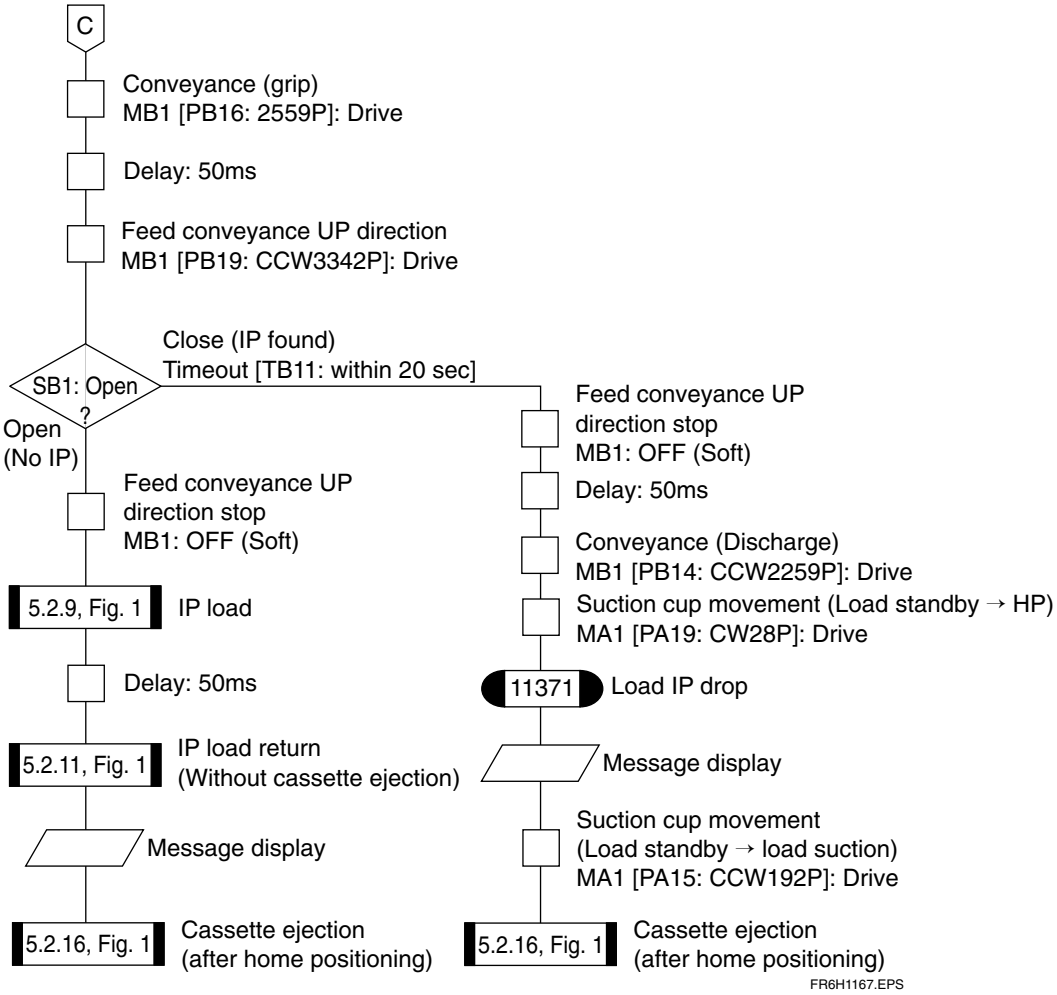
5.2.2 IP Feed

<Fig. 1 IP Feed Flow>

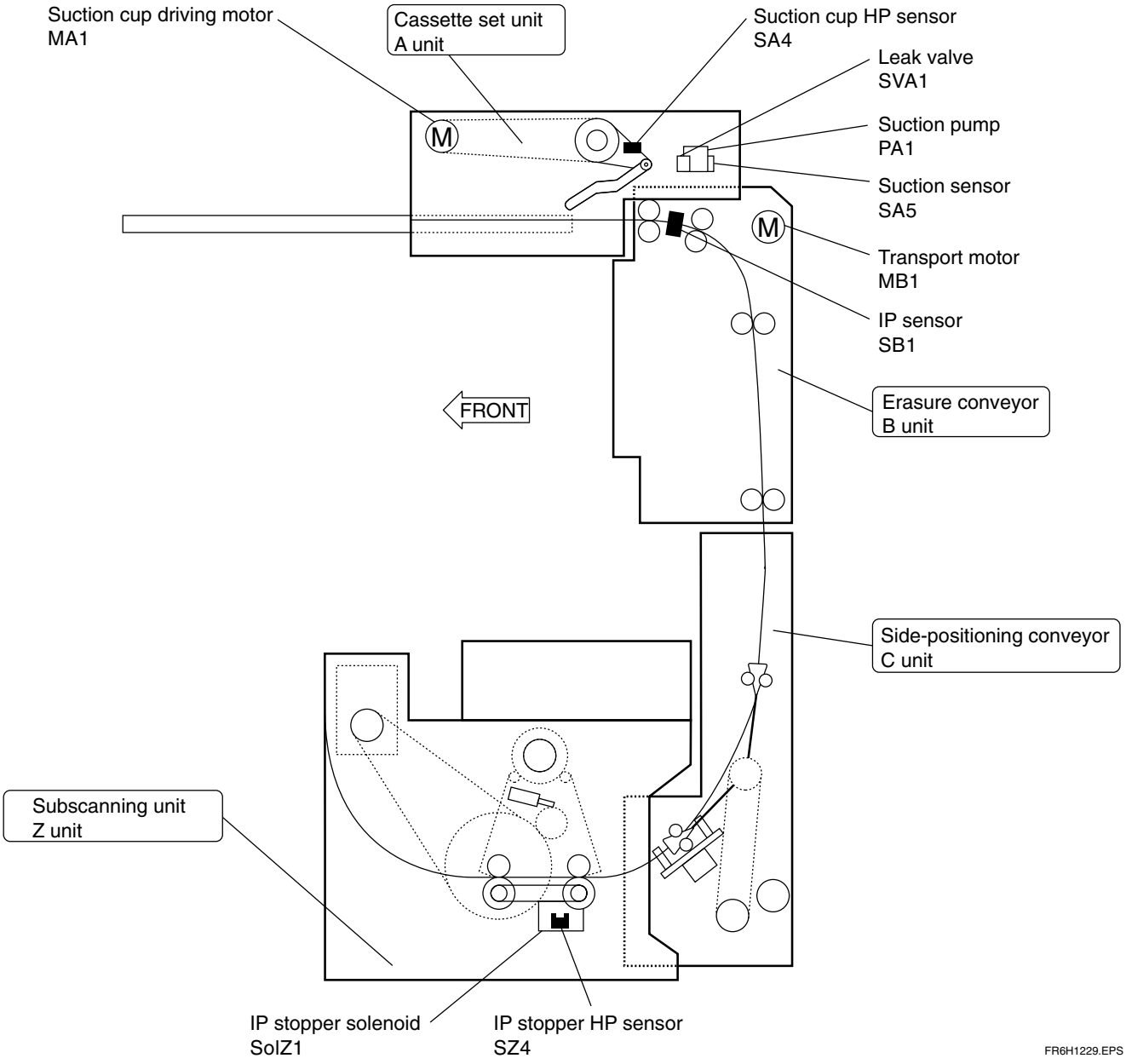



A
Conveyance driving
MB1 [PB11: CW2888P]: Drive
Suction cup movement
(Feed suction → feed leak)
MA1 [PA12: CW2031P]: Drive
(Synchronize)
Suction sensor confirmation
SA5: Close?
Open (Suction NG)
Close (Suction OK)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Delay [TA47: 0.1sec]
Suction cup movement
(HP → feed leak)
MA1 [PA28: CW164P]: Drive
Suction sensor confirmation
SA5: Open?
Close (Leak NG)
Timeout [TA49: within 5 sec]
Open (Leak OK)
12325
Feed leak error
Retry?
Within 1 time [NA21]
2 times or more
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
Suction cup HP confirmation
SA4: Close?
Open
(HP position NG)
Close (HP position OK)
5.2.14, Fig. 2
Sensor confirmation 2
(SA4)
12318
Suction cup HP return failure
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Suction cup movement
(HP → feed leak)
MA1 [PA14: CCW164P]: Drive
Leak valve (SVA1) :
OFF (Close)
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
11320
Feed IP drop
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA11: CCW2195P]: Drive
5.2.13, Fig. 1
Cassette ejection
5.1.7, Fig. 1
Suction cup home positioning
14320
Feed IP drop retry
D
B
FR6H1165.EPS


B
Conveyance driving
MB1 [PB12: CW221P]: Drive
Suction cup movement
(Feed leak → load standby)
MA1 [PA13: CW192P]: Drive
Leak valve
(SVA1): OFF (Close)
(Synchronize)
Stopper protrusion
Solenoid (SolZ1): ON (Protrusion)
SB1: Close?
Open (No IP)
Close
(IP found)
Conveyance driving
MB1 [PB19: CCW3342P]: Drive
Close (IP found)
Timeout [TB19: within 3000 sec]
SB1: Open?
Open
(No IP)
Conveyance driving stop
MB1: OFF
Delay: 50ms
Cassette inlet
IP confirmation
Conveyance driving
MB1 [PB13: CW2559P]
Open (No IP)
Timeout [TA44: within 1 sec]
SB1: Close?
Close
(IP found)
Conveyance driving stop
MB1: OFF
Delay [TA47: 0.1sec]
Conveyance driving stop
MB1: OFF
CMOS: IP found within machine
Retry?
Within 3 times [NA21]
4 times or more
2
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup
home positioning
5.1.7, Fig. 1
Suction cup
home positioning
11321
IP grip failure
14321
IP grip failure retry
5.2.14, Fig. 2
Sensor confirmation 2
(SB1)
D
Message display
Close (Stopper protrusion NG)
Timeout [TZ41: within 0.5 sec]
SZ4: Open?
Suction cup movement
(Load standby → load suction)
MA1 [PA11: CCW2195P]: Drive
IP stopper
protrusion
confirmation
Open
(Stopper
protrusion
OK)
5.2.13, Fig. 1
Cassette ejection
Retry?
Within 1 time (NZ21)
14340
IP stopper protrusion retry
2 times or more
END
Stopper retreat
Solenoid (SolZ1): OFF (Retreat)
5.2.14, Fig. 2
Sensor confirmation 2
(SZ4)
Delay [TZ43: 2sec]
11340
IP stopper protrusion failure
Stopper protrusion
Solenoid (SolZ1): ON (Protrusion)
C
2
FR6H1166.EPS


C
Conveyance (grip)
MB1 [PB16: 2559P]: Drive
Delay: 50ms
Feed conveyance UP direction
MB1 [PB19: CCW3342P]: Drive
SB1: Open ?
Close (IP found)
Timeout [TB11: within 20 sec]
Open
(No IP)
Feed conveyance UP direction stop
MB1: OFF (Soft)
5.2.9, Fig. 1
IP load
Delay: 50ms
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
Message display
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2259P]: Drive
Suction cup movement (Load standby → HP)
MA1 [PA19: CW28P]: Drive
11371
Load IP drop
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
FR6H1167.EPS

<I/O Locations>



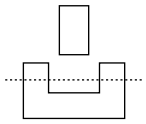
<I/O Table>

Symbol	Name	Type	Function
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.
MB1	IP transport motor	Pulse motor	Conveys the IP.
PA1	IP suction	DC pump	Sucks when turned ON.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SA5	Suction sensor	Suction sensor	Detects that it is sucked.
SB1	Cassette inlet IP sensor	PI (19mm)	IP conveyance sensor
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.
SVA1	IP leak	Solenoid valve	Leaks when turned ON.

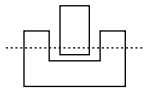
TR6H1088.EPS

<Sensor ON/OFF Status>

SA4/SA5/SZ4

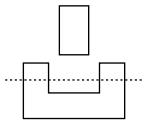


OFF: Open (not blocked)

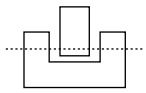


ON: Close (blocked)

SB1



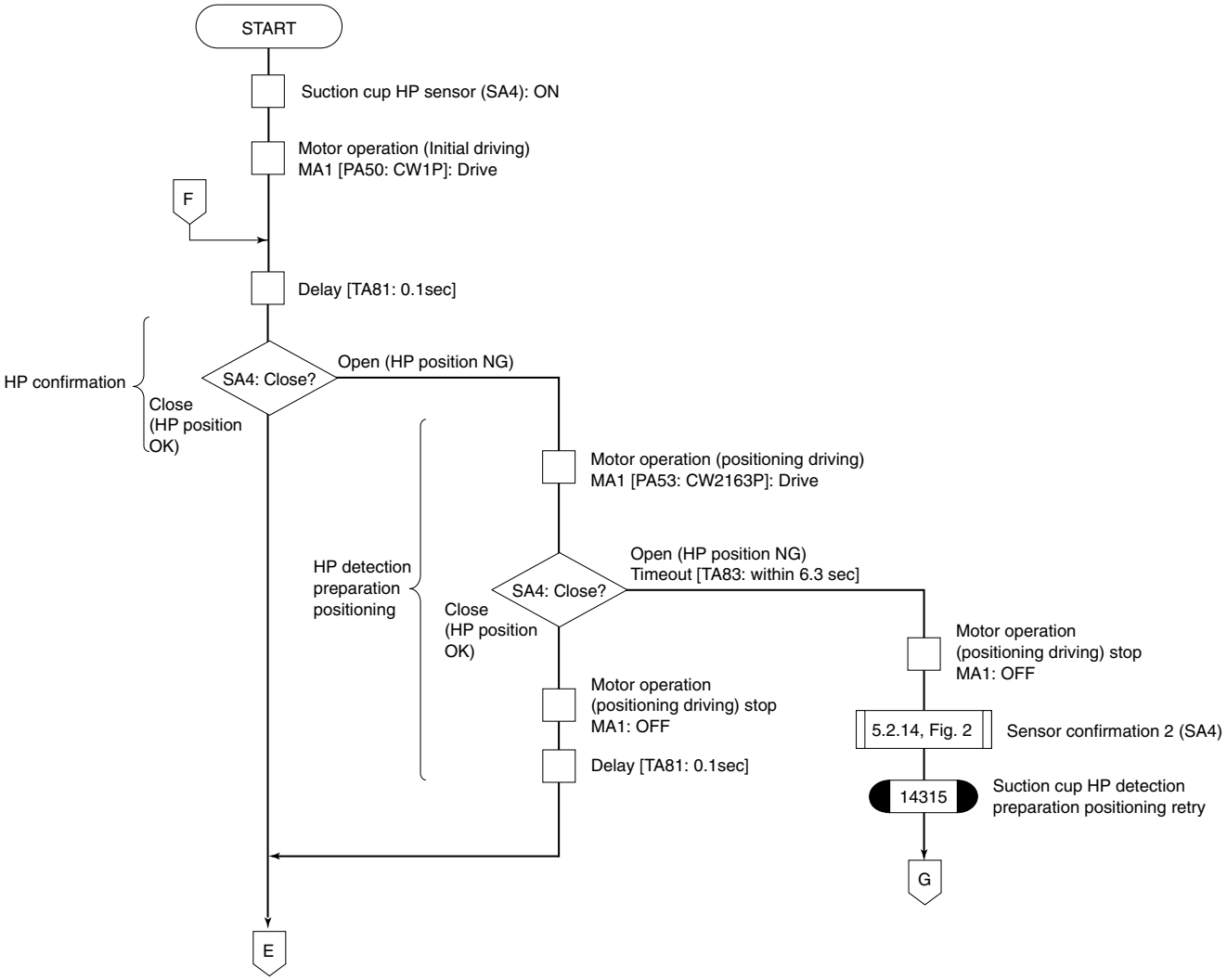
OFF: Open (no IP)



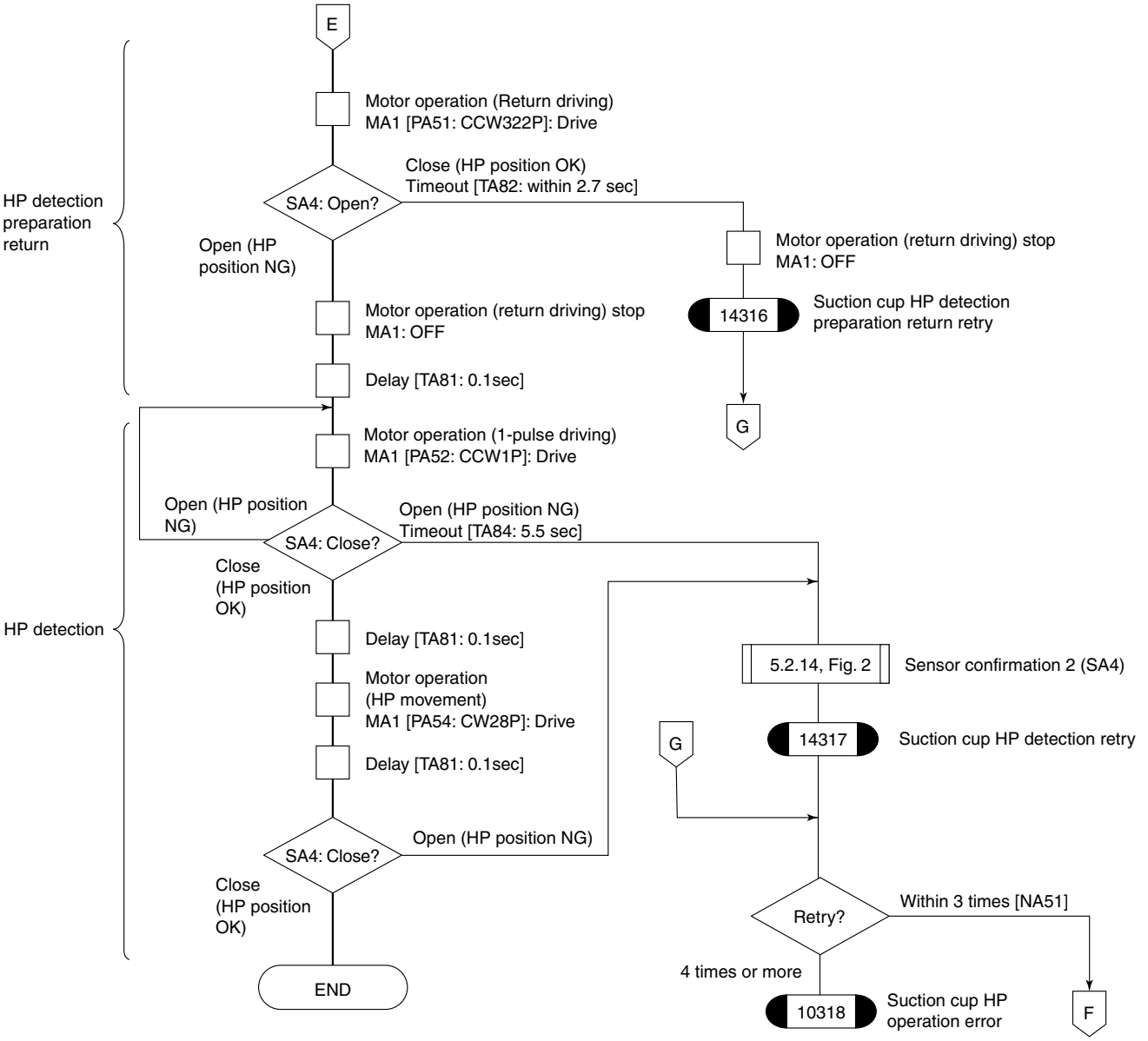
ON: Close (IP found)

FR6H1254.EPS

<Fig. 2 Suction Cup Home Positioning Flow>



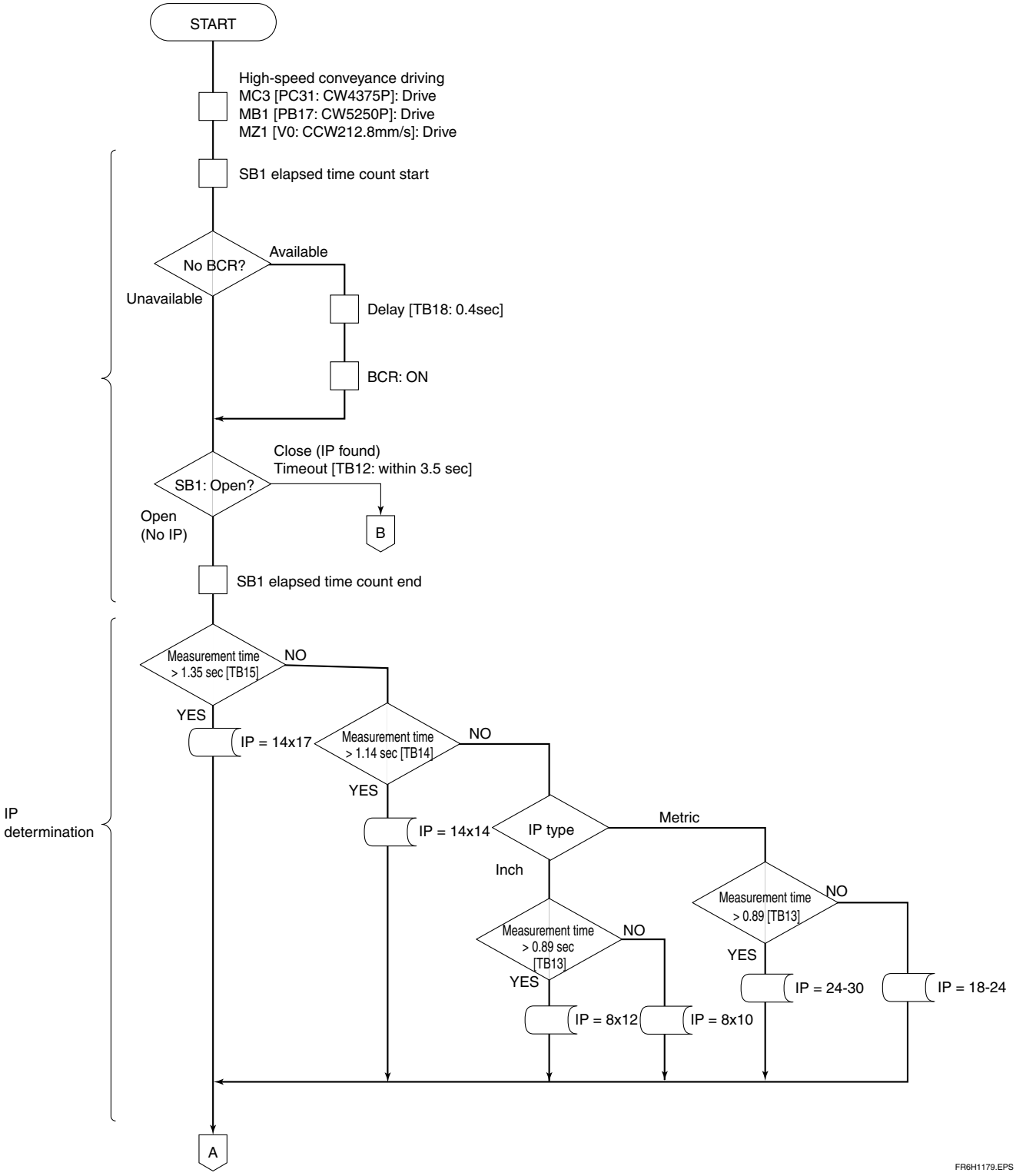
FR6H1168.EPS

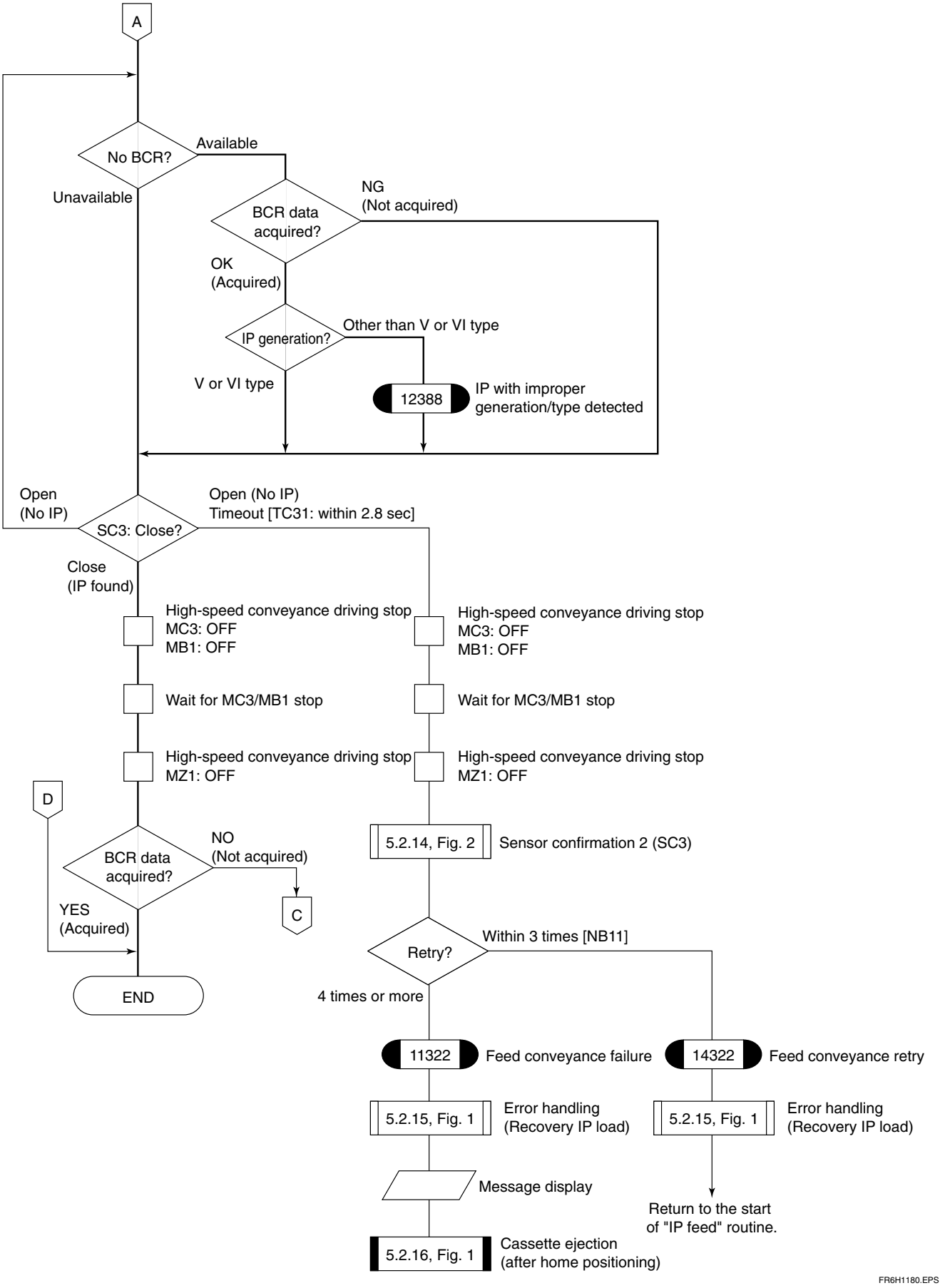


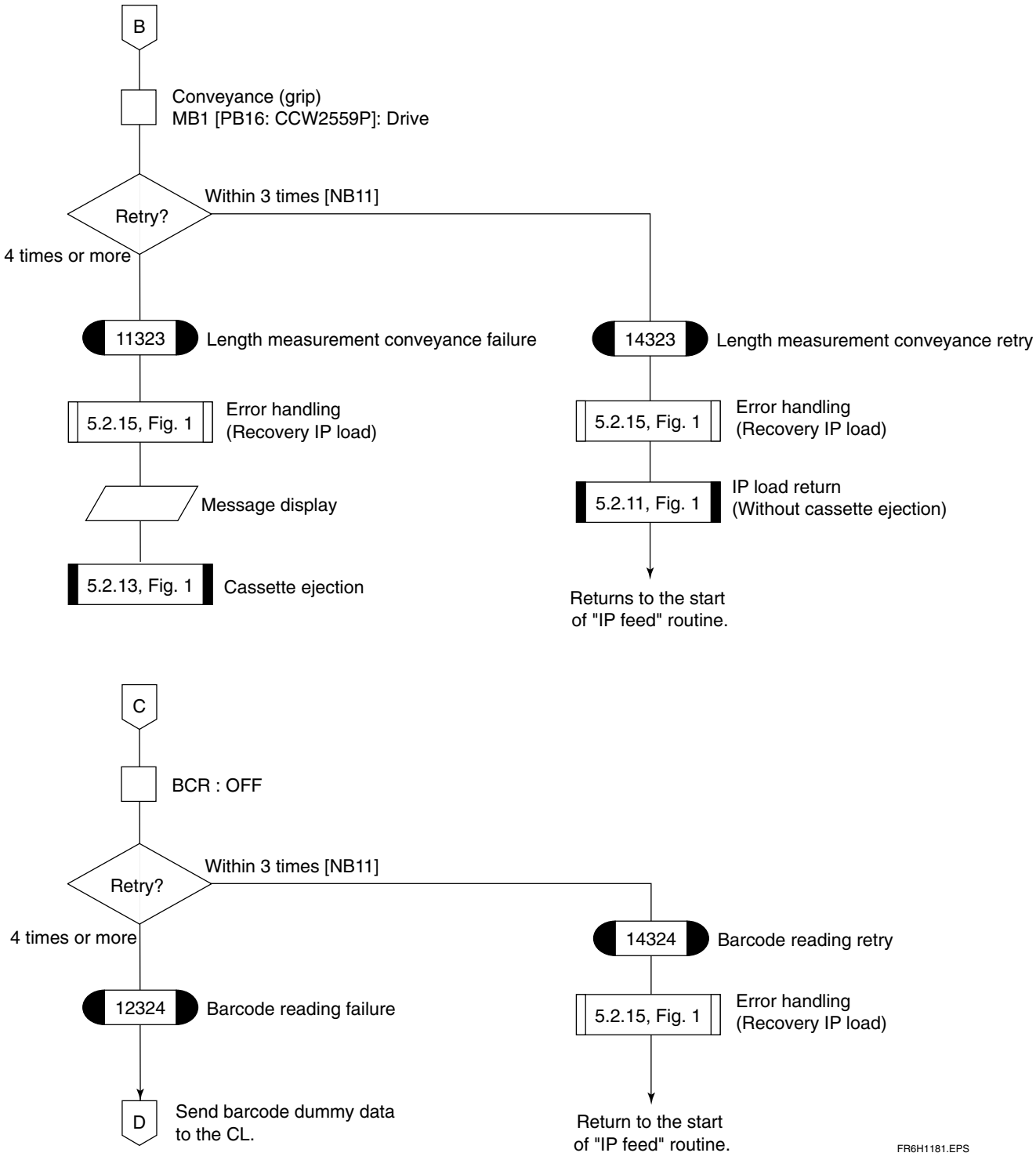
FR6H1169.EPS

5.2.3 Feed Conveyance

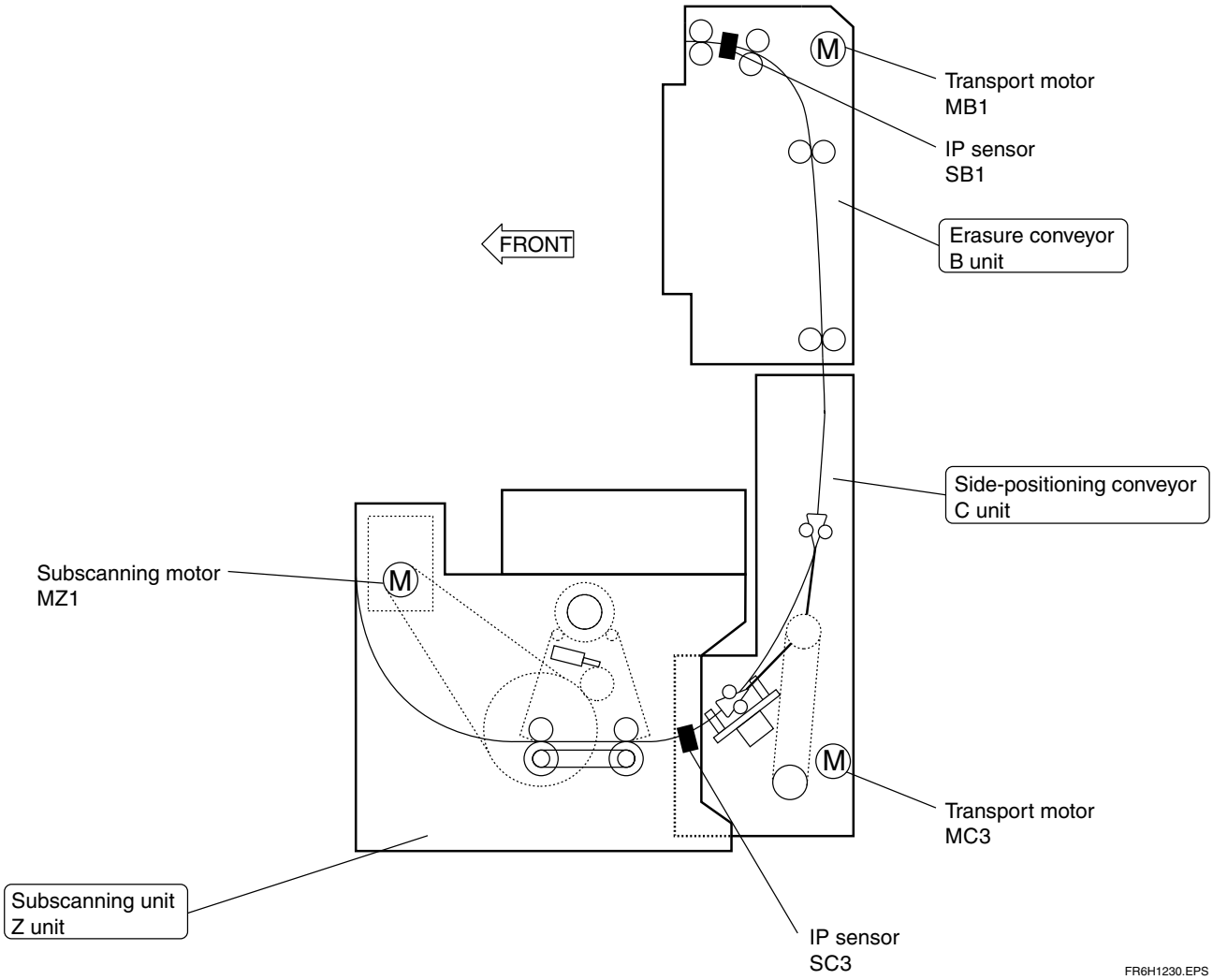
<Fig. 1 Feed Conveyance Flow>




A
No BCR?
Available
Unavailable
BCR data acquired?
NG
(Not acquired)
OK
(Acquired)
IP generation?
Other than V or VI type
V or VI type
12388
IP with improper generation/type detected
Open
(No IP)
SC3: Close?
Open (No IP)
Timeout [TC31: within 2.8 sec]
Close
(IP found)
High-speed conveyance driving stop
MC3: OFF
MB1: OFF
Wait for MC3/MB1 stop
High-speed conveyance driving stop
MZ1: OFF
D
BCR data acquired?
NO
(Not acquired)
C
YES
(Acquired)
END
5.2.14, Fig. 2
Sensor confirmation 2 (SC3)
Retry?
Within 3 times [NB11]
4 times or more
11322
Feed conveyance failure
14322
Feed conveyance retry
5.2.15, Fig. 1
Error handling
(Recovery IP load)
Message display
Return to the start of "IP feed" routine.
5.2.16, Fig. 1
Cassette ejection
(after home positioning)
FR6H1180.EPS


B
Conveyance (grip)
MB1 [PB16: CCW2559P]: Drive
Retry?
Within 3 times [NB11]
4 times or more
11323
Length measurement conveyance failure
14323
Length measurement conveyance retry
5.2.15, Fig. 1
Error handling
(Recovery IP load)
5.2.15, Fig. 1
Error handling
(Recovery IP load)
Message display
5.2.11, Fig. 1
IP load return
(Without cassette ejection)
5.2.13, Fig. 1
Cassette ejection
Returns to the start
of "IP feed" routine.
C
BCR : OFF
Retry?
Within 3 times [NB11]
4 times or more
14324
Barcode reading retry
12324
Barcode reading failure
5.2.15, Fig. 1
Error handling
(Recovery IP load)
D
Send barcode dummy data
to the CL.
Return to the start
of "IP feed" routine.
FR6H1181.EPS

<I/O Locations>



FR6H1230.EPS

<I/O Table>

Symbol	Name	Type	Function
SC3	Side-positioning IP sensor	PI (19mm)	Detects the IP.
SB1	Cassette inlet IP sensor	PI (19mm)	Detects the IP.
MC3	IP transport motor	Pulse motor	Conveys the IP.
MB1	IP transport motor	Pulse motor	Conveys the IP.
MZ1	Subscanning motor	FFM	Conveys the IP.

TR6H1076.EPS

<Sensor ON/OFF Status>

SC3/SB1

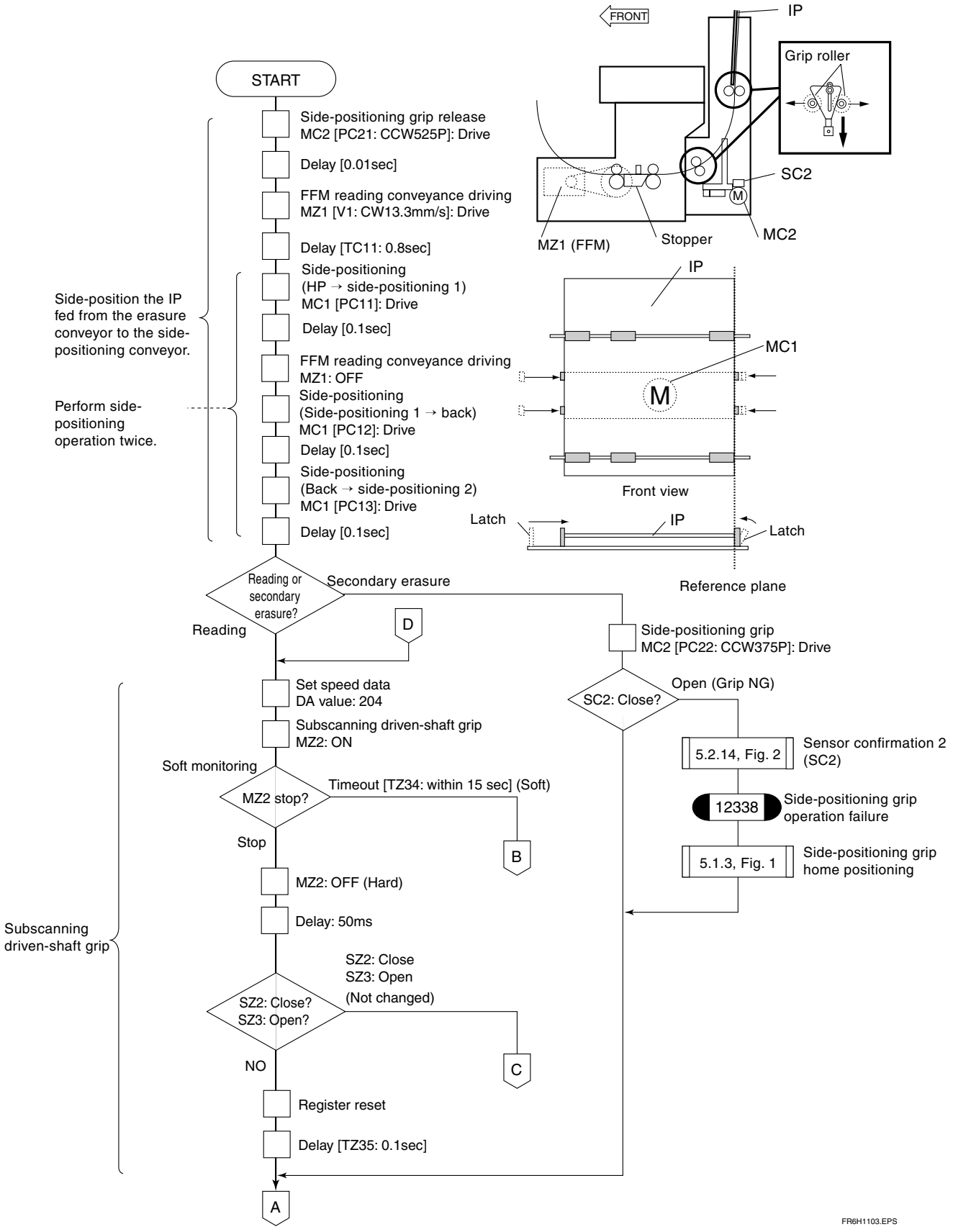
OFF: Open (no IP)

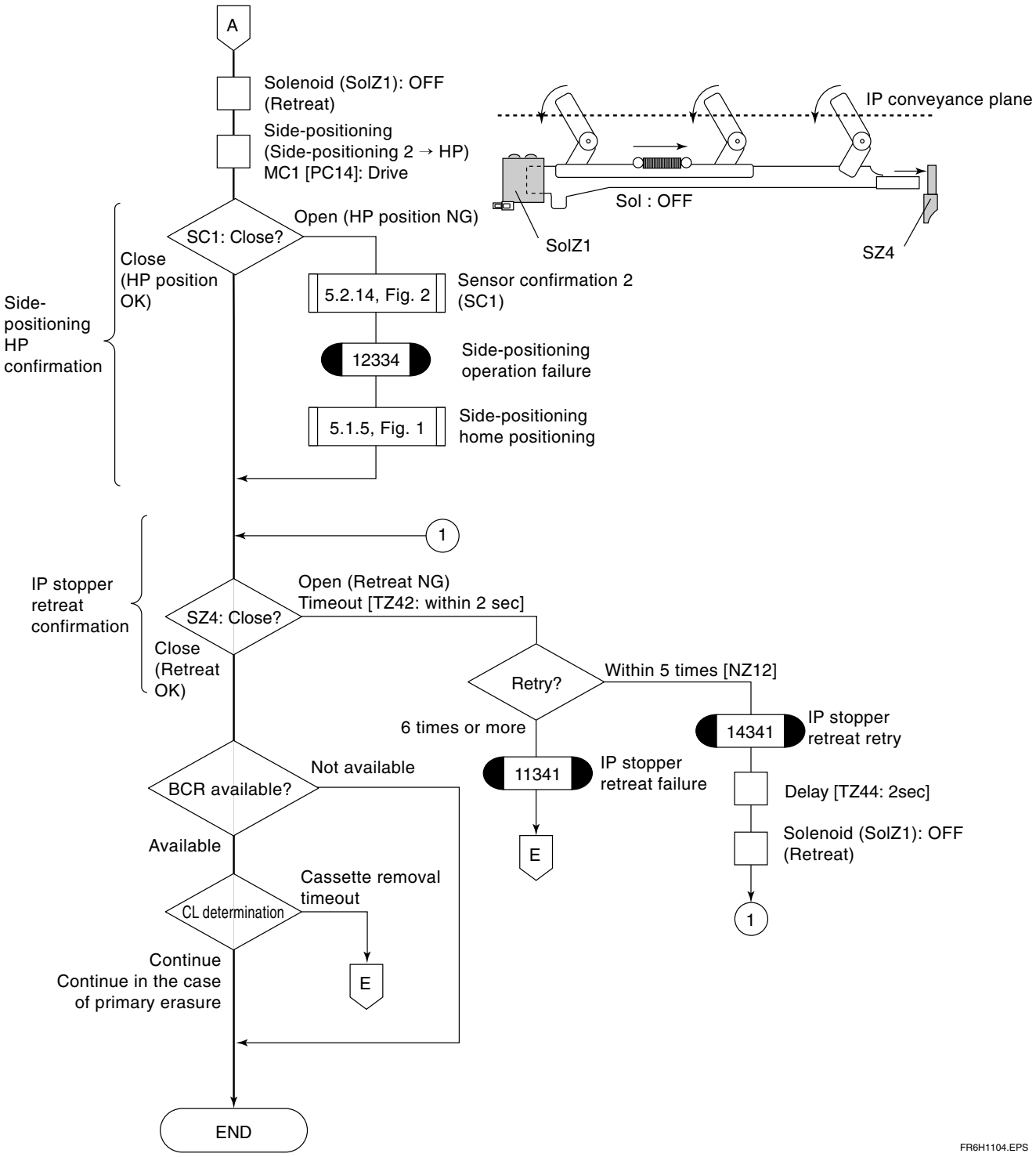
ON: Close (IP found)

FR6H1255.EPS

5.2.4 Side-Positioning Operation

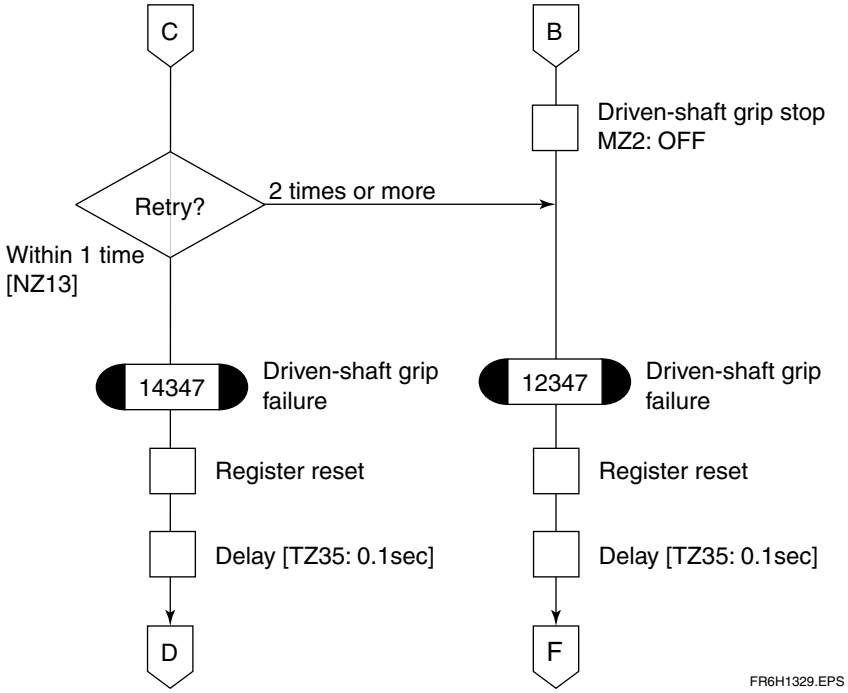
<Fig. 1 Side-Positioning Flow>

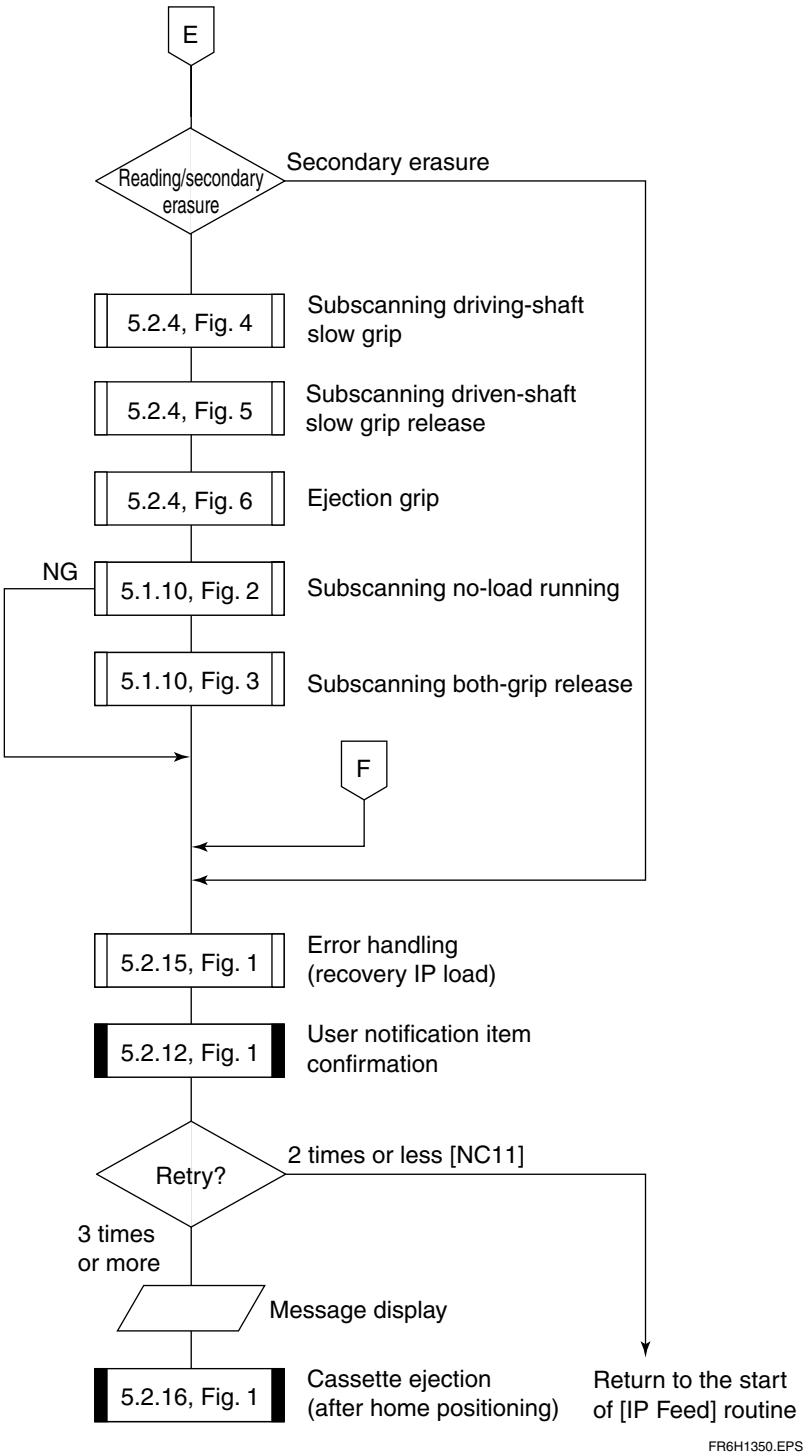




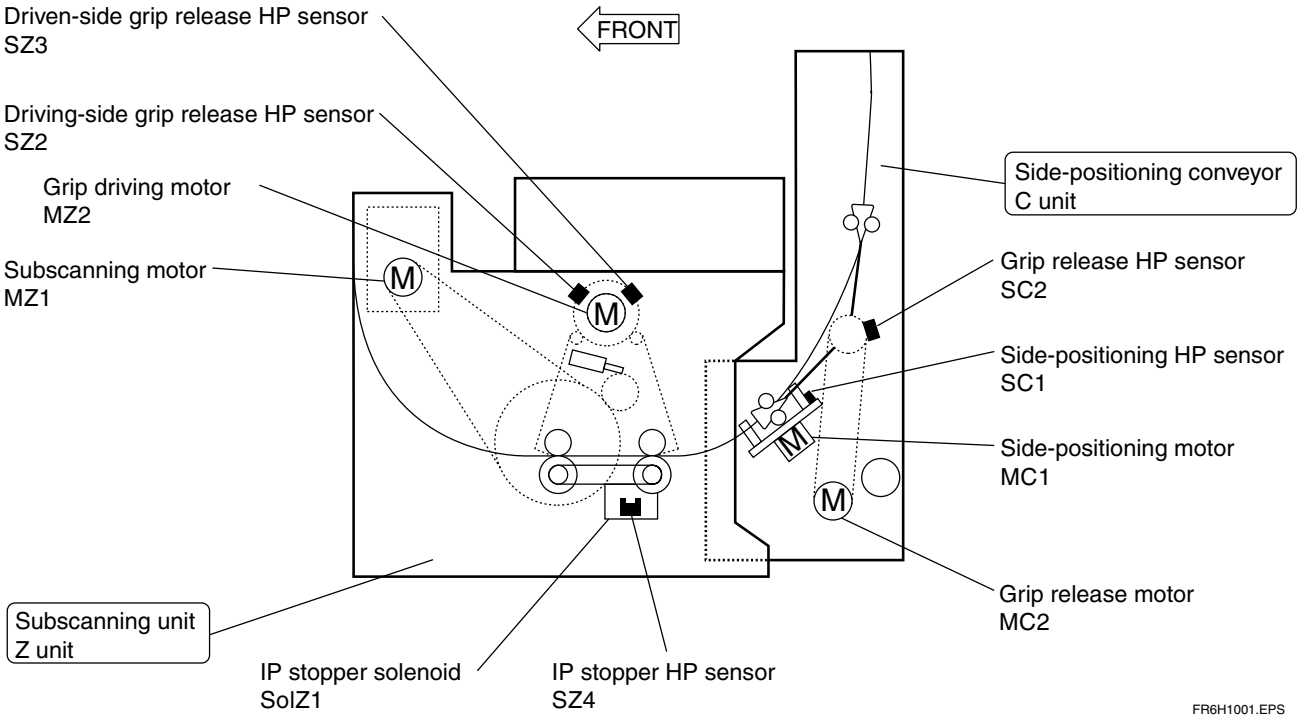
Symbol	Operation	IP size					
		14x17	14x14	10x12	8x10	Metric 18x24	Metric 24x30
PC11	Side-positioning (HP → side-positioning 1)	CCW177P	CCW177P	CCW617P	CCW617P	CCW730P	CCW730P
PC12	Side-positioning (Side-positioning 1 → back)	CW39P	CW39P	CW32P	CW32P	CW60P	CW60P
PC13	Side-positioning (Back → side-positioning 2)	CCW39P	CCW39P	CCW32P	CCW32P	CCW60P	CCW60P
PC14	Side-positioning (Side-positioning 2 → HP)	CW177P	CW177P	CW617P	CW617P	CW730P	CW730P

TR6H1055.EPS


C
B
Driven-shaft grip stop
MZ2: OFF
Retry?
2 times or more
Within 1 time
[NZ13]
14347
Driven-shaft grip
failure
12347
Driven-shaft grip
failure
Register reset
Register reset
Delay [TZ35: 0.1sec]
Delay [TZ35: 0.1sec]
D
F
FR6H1329.EPS


E
Reading/secondary erasure
Secondary erasure
5.2.4, Fig. 4
Subscanning driving-shaft slow grip
5.2.4, Fig. 5
Subscanning driven-shaft slow grip release
5.2.4, Fig. 6
Ejection grip
NG
5.1.10, Fig. 2
Subscanning no-load running
5.1.10, Fig. 3
Subscanning both-grip release
F
5.2.15, Fig. 1
Error handling (recovery IP load)
5.2.12, Fig. 1
User notification item confirmation
Retry?
2 times or less [NC11]
3 times or more
Message display
5.2.16, Fig. 1
Cassette ejection (after home positioning)
Return to the start of [IP Feed] routine
FR6H1350.EPS

<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SC1	Side-positioning HP sensor	PI (5mm)	Detects that it is in the side-positioning home position.
SC2	Grip release HP sensor	PI (5mm)	Detects that it is in the grip release home position.
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
SZ4	IP stopper HP sensor	PI (5mm)	Detects that it is in the IP stopper home position.
SolZ1	IP stopper driving SOL	Power-down solenoid	Protrudes the IP stopper when turned ON.
MC1	Side-positioning motor	Pulse motor	Drives the side-positioning mechanism.
MC2	Grip release motor	Pulse motor	Drives to release the grip.
MZ1	Subscanning motor	FFM	Drives to convey the IP.
MZ2	Grip driving motor	DC motor	Drives the driven-shaft grip.

TR6H1056.EPS

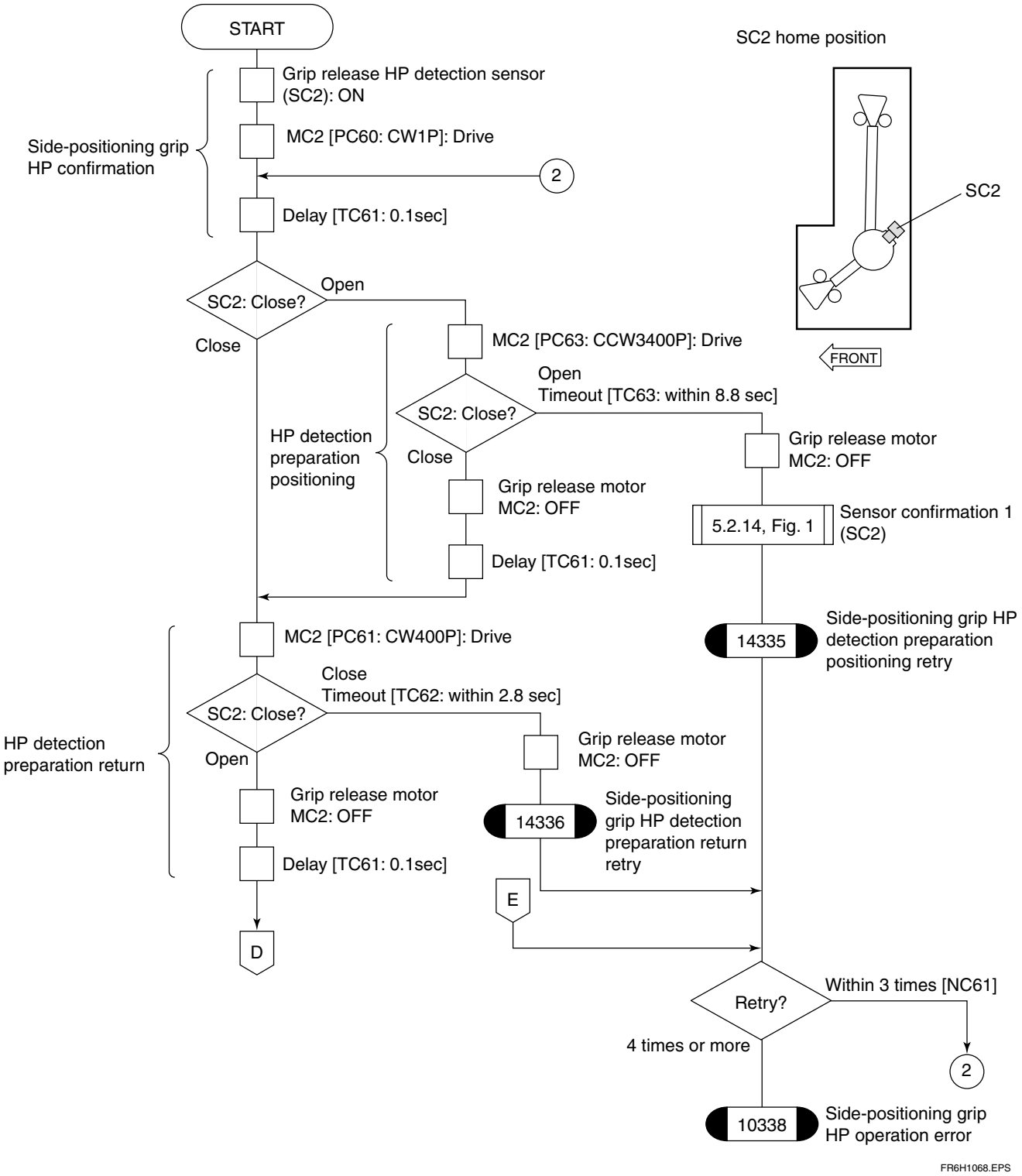
<Sensor ON/OFF Status>

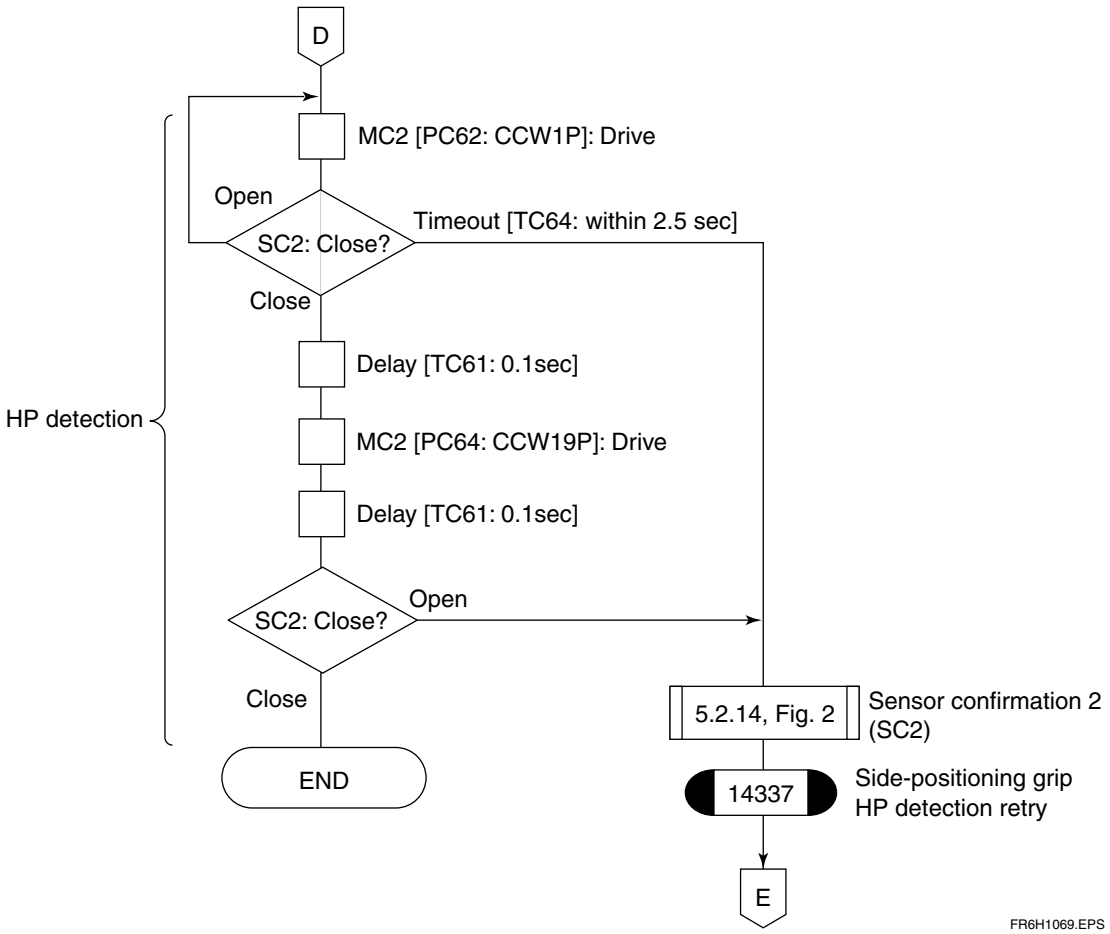
SC1/SC2/SZ2/SZ3/SZ4

OFF: Open (not blocked) ON: Close (blocked)

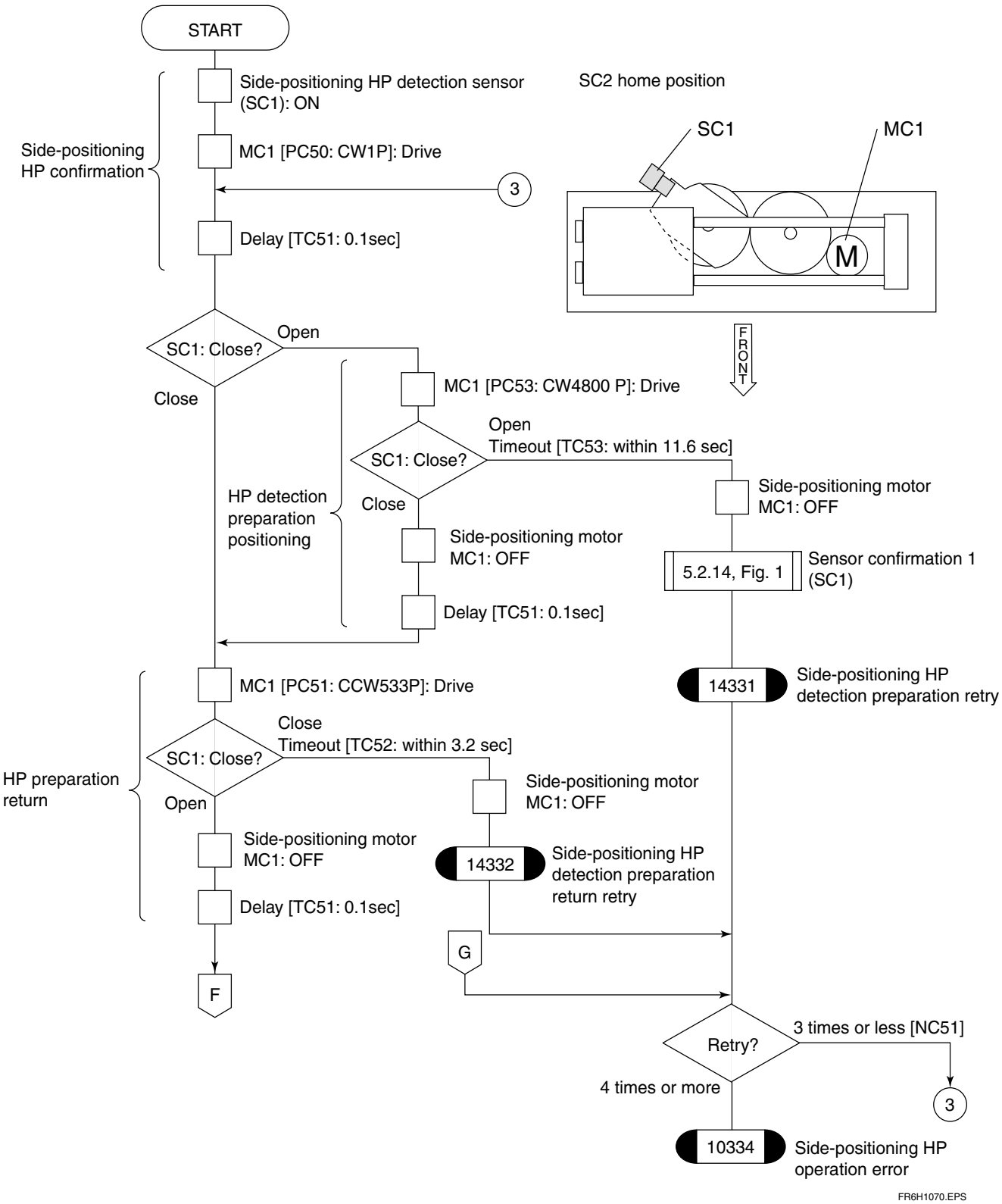
FR6H1067.EPS

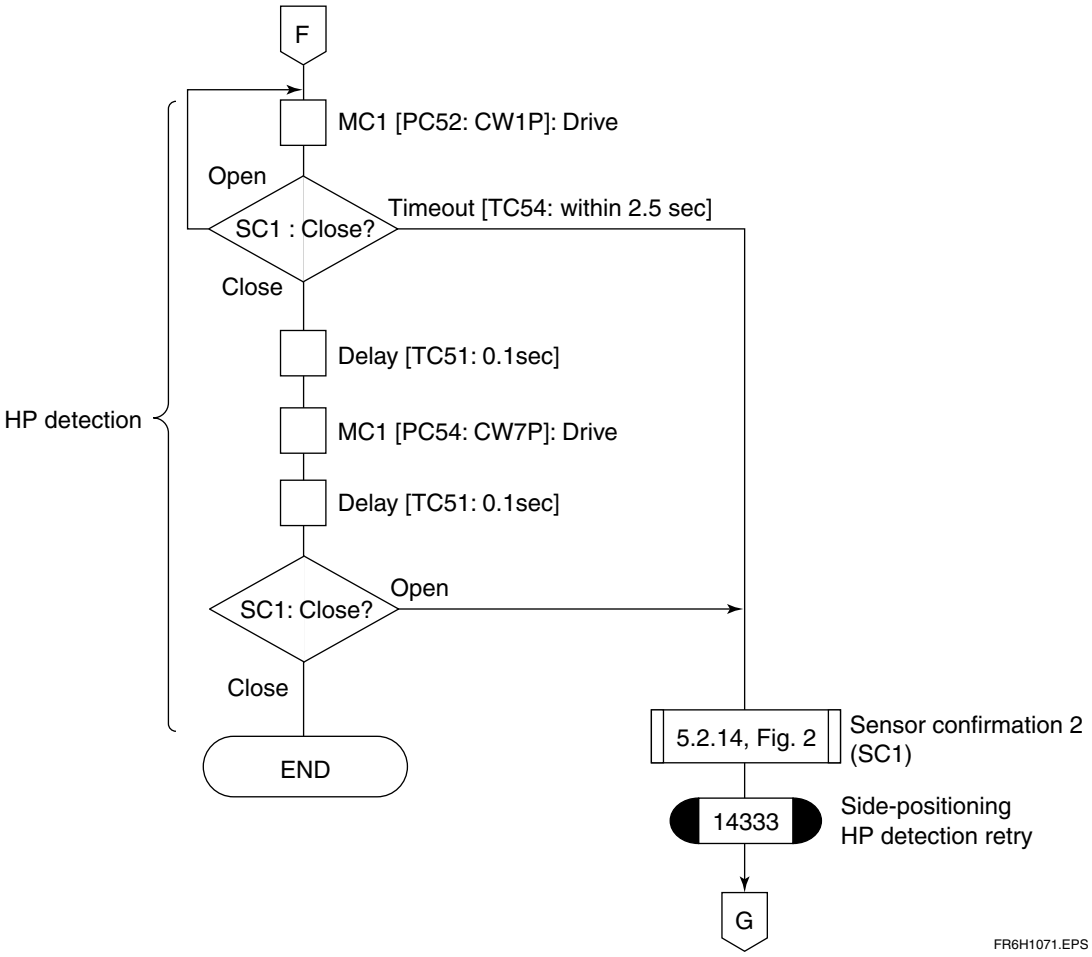
<Fig. 2 Side-Positioning Grip Home Positioning Flow>



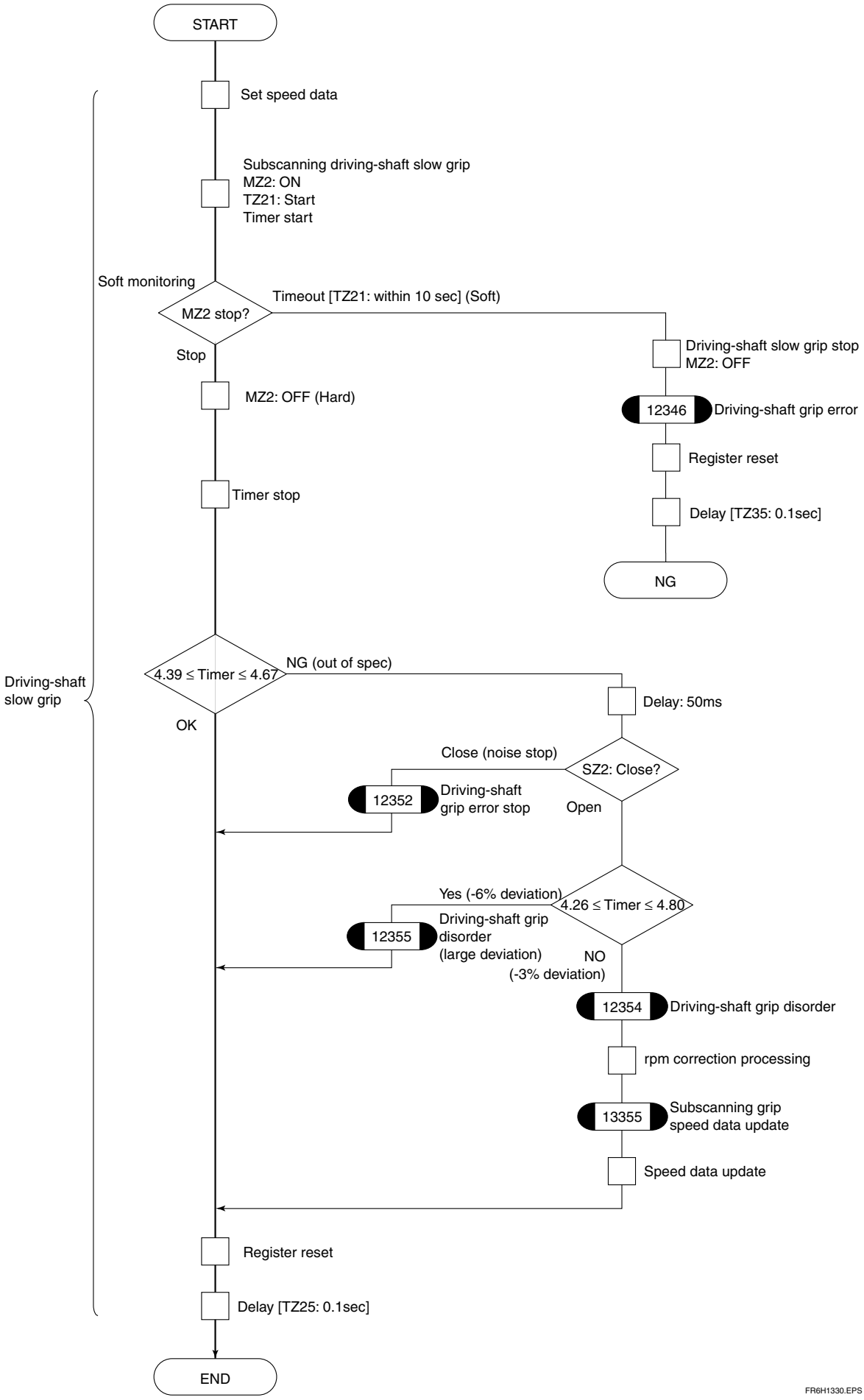

D
MC2 [PC62: CCW1P]: Drive
Open
SC2: Close?
Timeout [TC64: within 2.5 sec]
Close
Delay [TC61: 0.1sec]
HP detection
MC2 [PC64: CCW19P]: Drive
Delay [TC61: 0.1sec]
SC2: Close?
Open
Close
END
5.2.14, Fig. 2
Sensor confirmation 2 (SC2)
14337
Side-positioning grip HP detection retry
E
FR6H1069.EPS

<Fig. 3 Side-Positioning Home Positioning Flow>

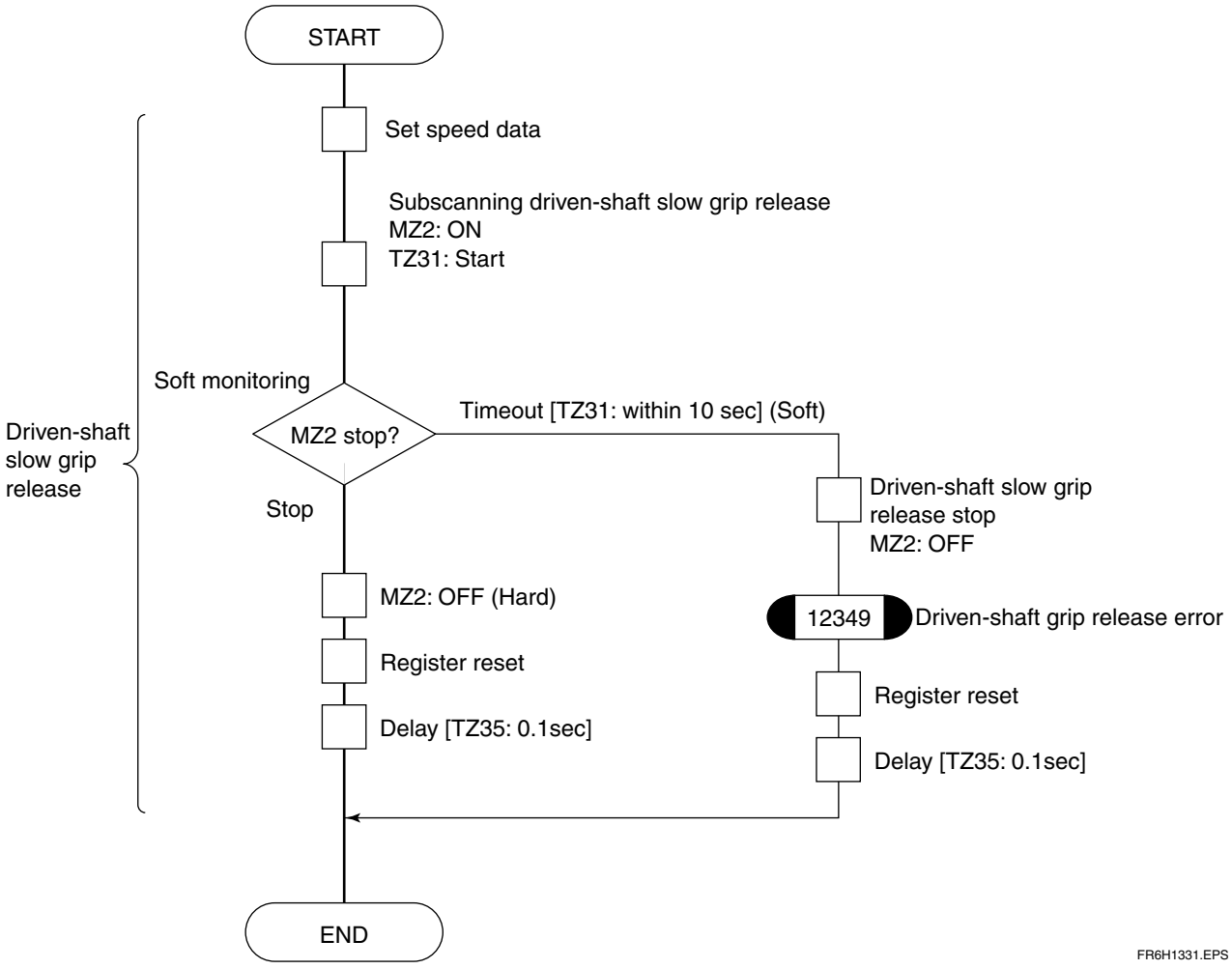



F
MC1 [PC52: CW1P]: Drive
Open
SC1 : Close?
Timeout [TC54: within 2.5 sec]
Close
Delay [TC51: 0.1sec]
HP detection
MC1 [PC54: CW7P]: Drive
Delay [TC51: 0.1sec]
SC1: Close?
Open
Close
END
5.2.14, Fig. 2
Sensor confirmation 2
(SC1)
14333
Side-positioning
HP detection retry
G
FR6H1071.EPS

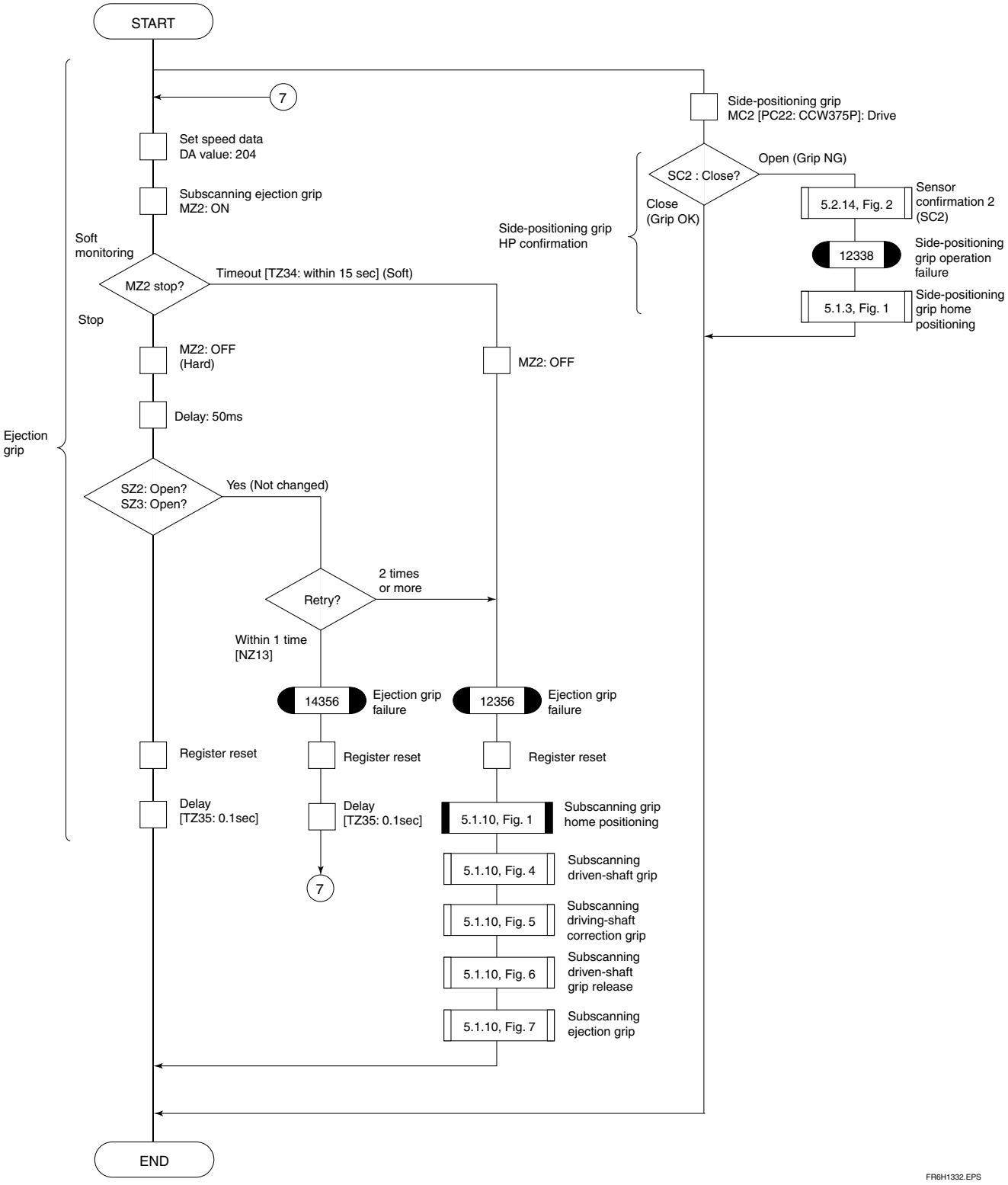
<Fig. 4 Subscanning Driving-shaft Slow Grip Flow>



<Fig. 5 Subscanning Driven-Shaft Slow Grip Release Flow>

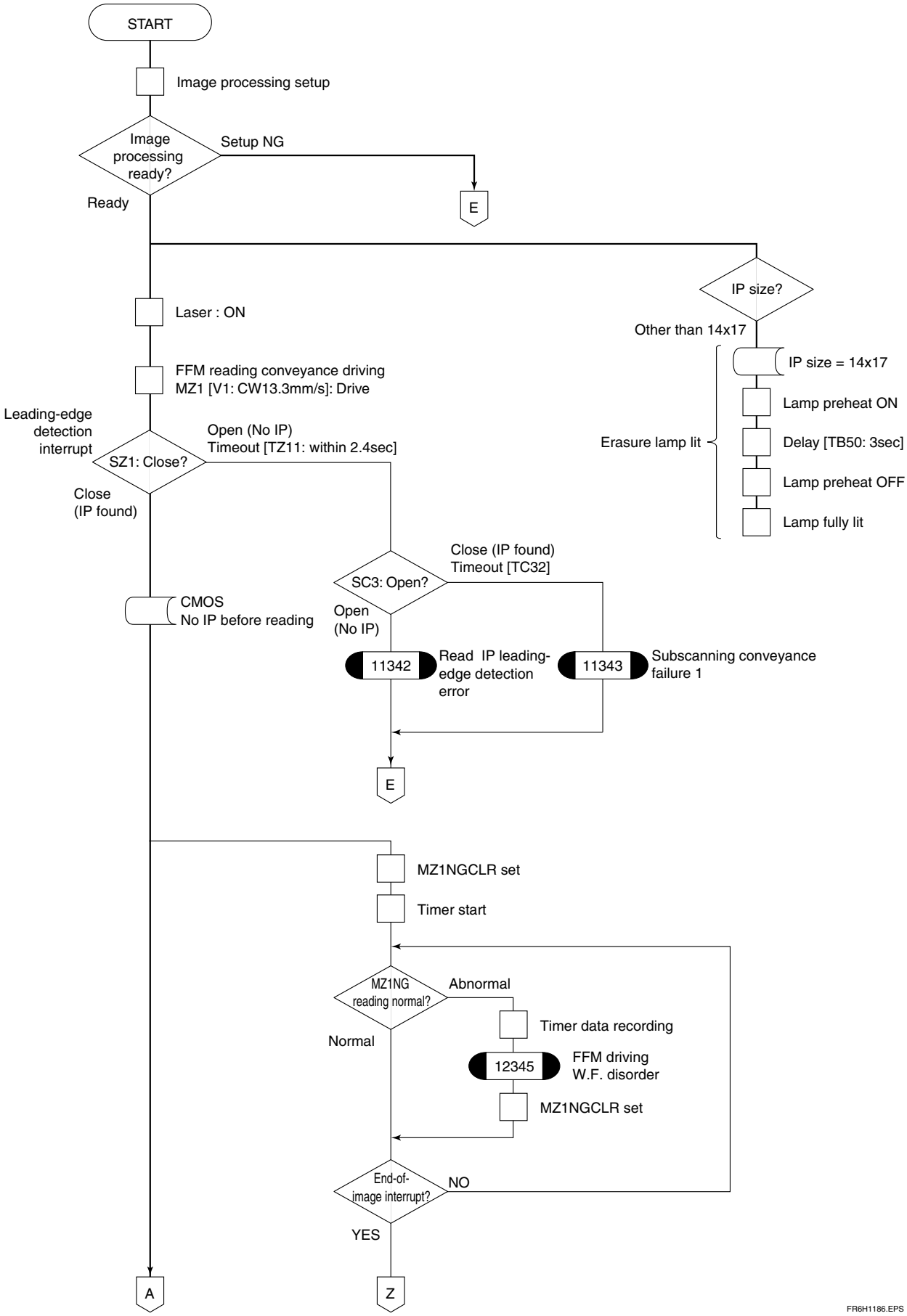


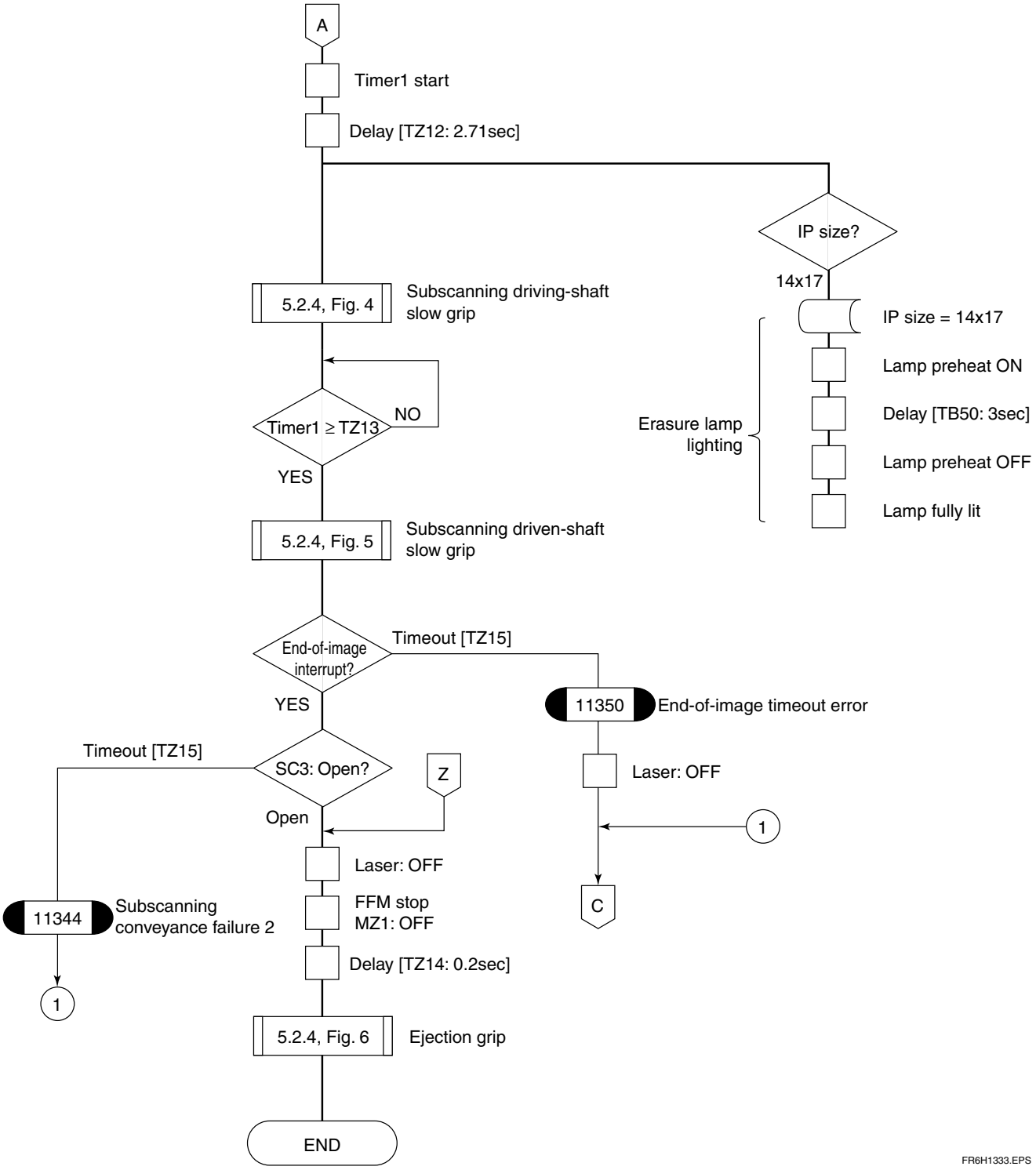
<Fig. 6 Ejection Grip Flow>



5.2.5 Reading

<Fig. 1 Reading Flow>

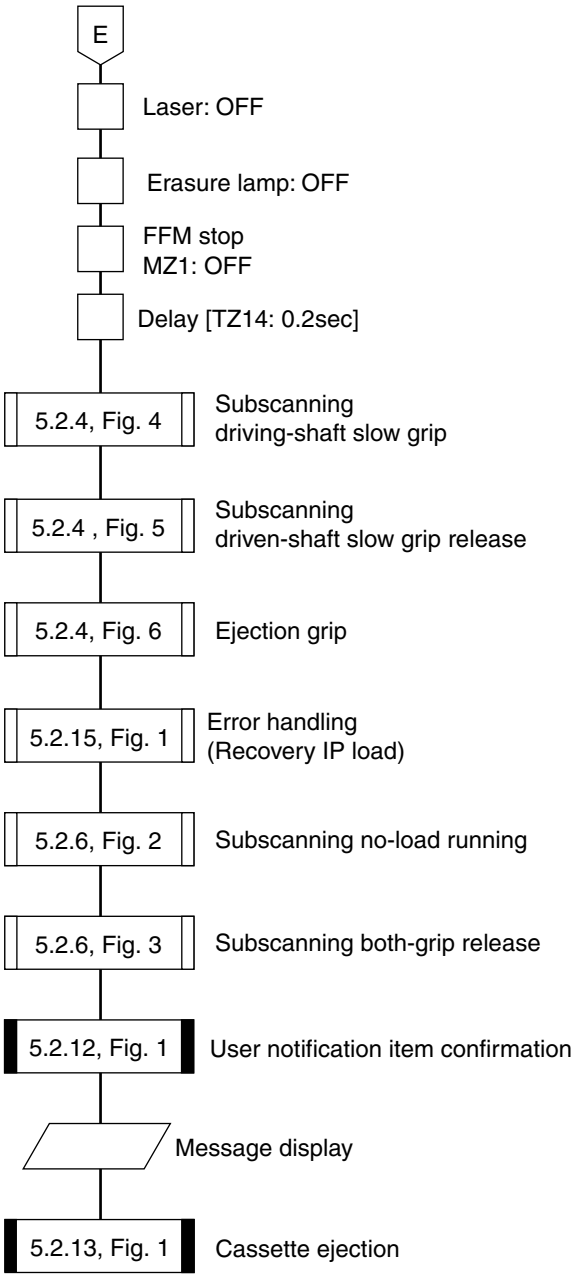




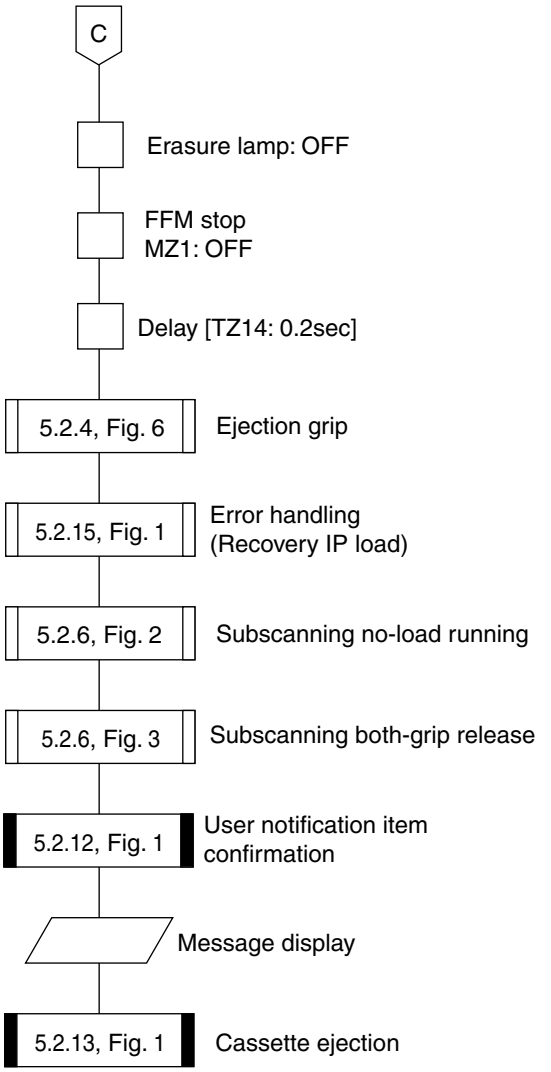
FR6H1333.EPS

Symbol	Operation	IP size					
		14x17	14x14	10x12	8x10	Metric 18x24	Metric 24x30
TC32	Read IP trailing-edge detection timeout	31.7 sec	26.0 sec	22.1 sec	14.5 sec	12.7 sec	21.8 sec
TZ13	Driven-shaft grip release start	26.27 sec	20.55 sec	16.72 sec	9.05 sec	7.32 sec	16.34 sec
TZ15	XXXXXX	34.3 sec	28.6 sec	24.8 sec	17.1 sec	15.4 sec	24.4 sec

TR6H1090.EPS

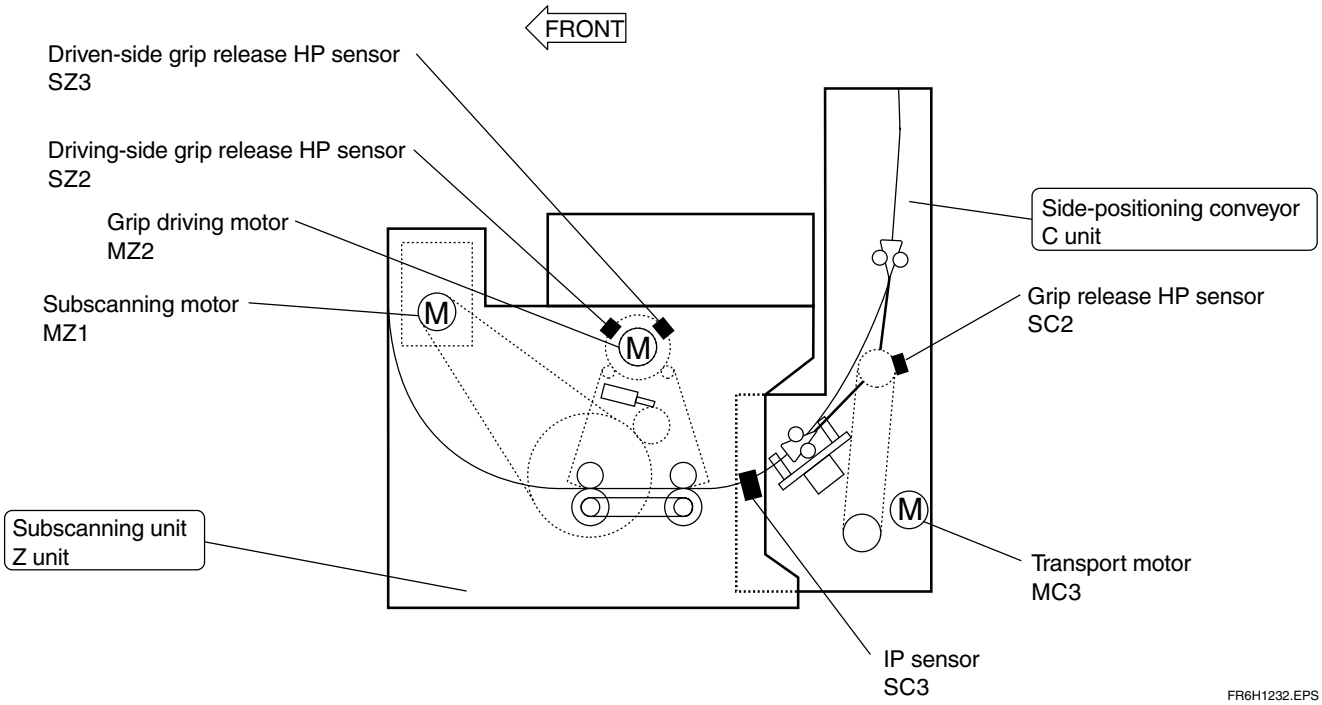


FR6H1334.EPS



FR6H1335.EPS

<I/O Locations>



FR6H1232.EPS

<I/O Table>

Symbol	Name	Type	Function
MZ1	Subscanning motor	FFM	Conveys the IP.
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).
MC3	IP transport motor	Pulse motor	Conveys the IP.
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
SC2	Grip release HP sensor	PI (5mm)	Detects that it is in the grip release home position.
SC3	Side-positioning IP sensor	PI (19mm)	Detects the IP.

TR6H1085.EPS

<Sensor ON/OFF Status>

SZ2/SZ3/SC2

OFF: Open (not blocked) ON: Close (blocked)

SC3

OFF: Open (no IP) ON: Close (IP found)

FR6H1256.EPS

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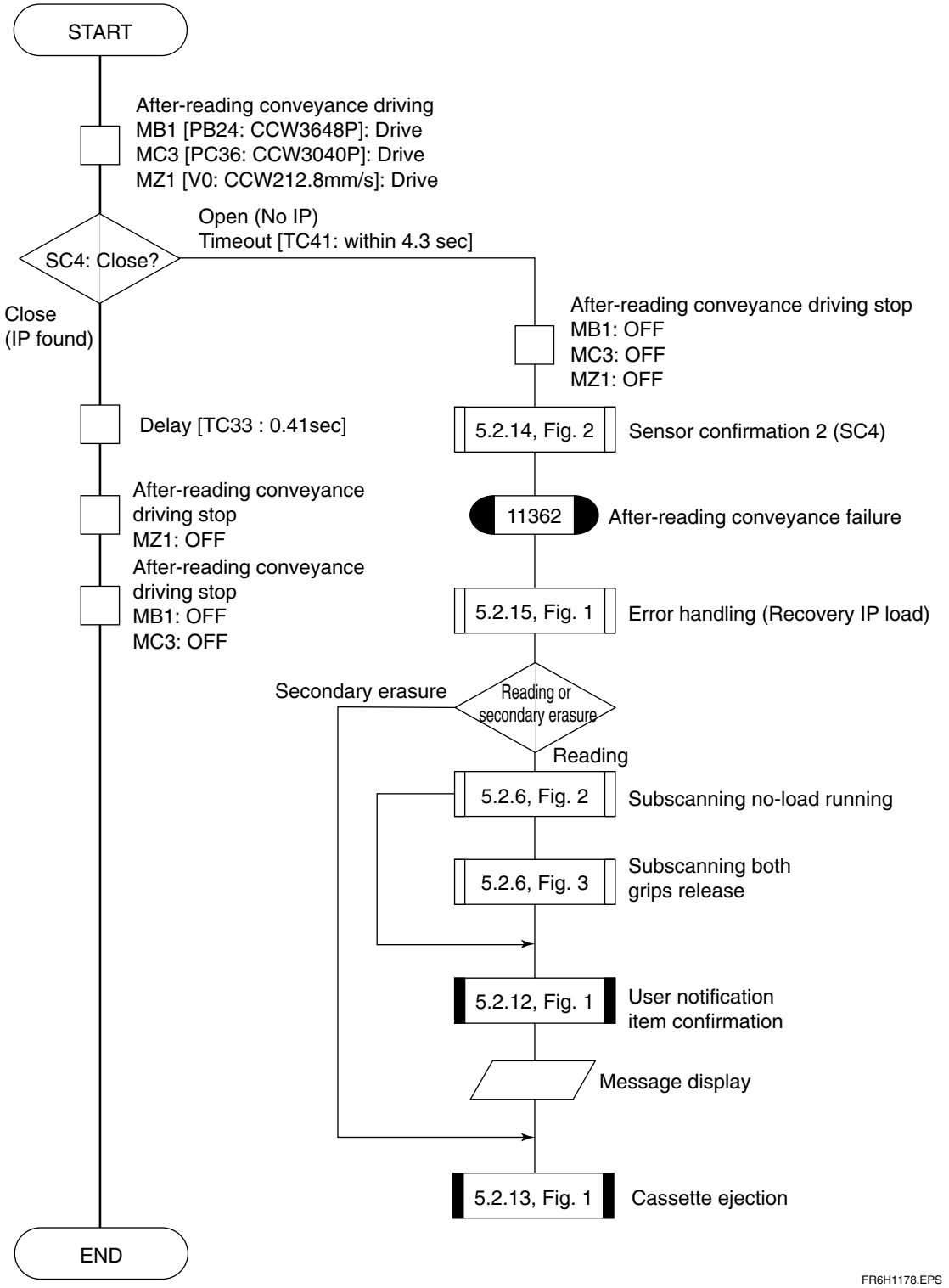
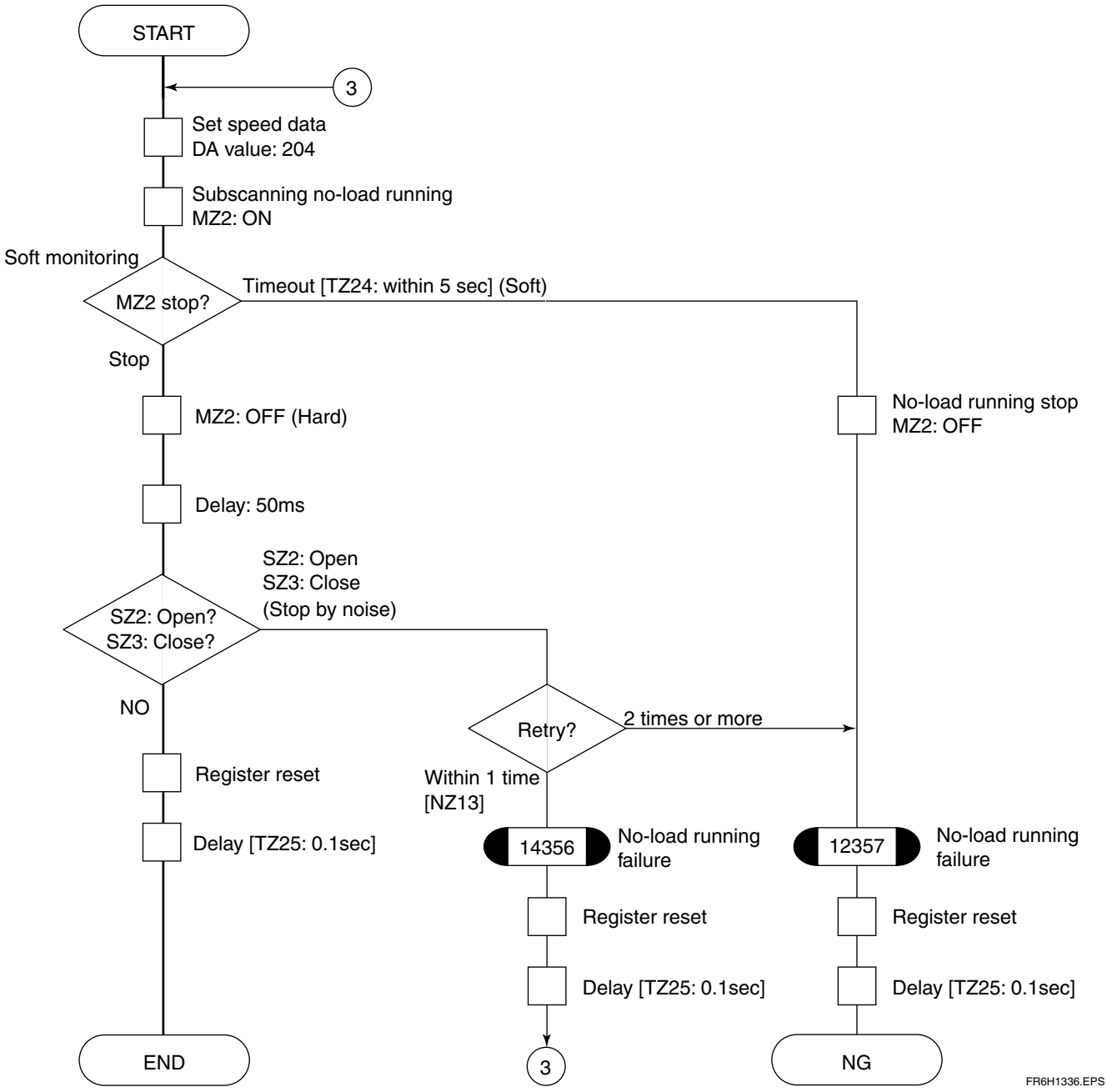
5.2.6 After-Reading Conveyance

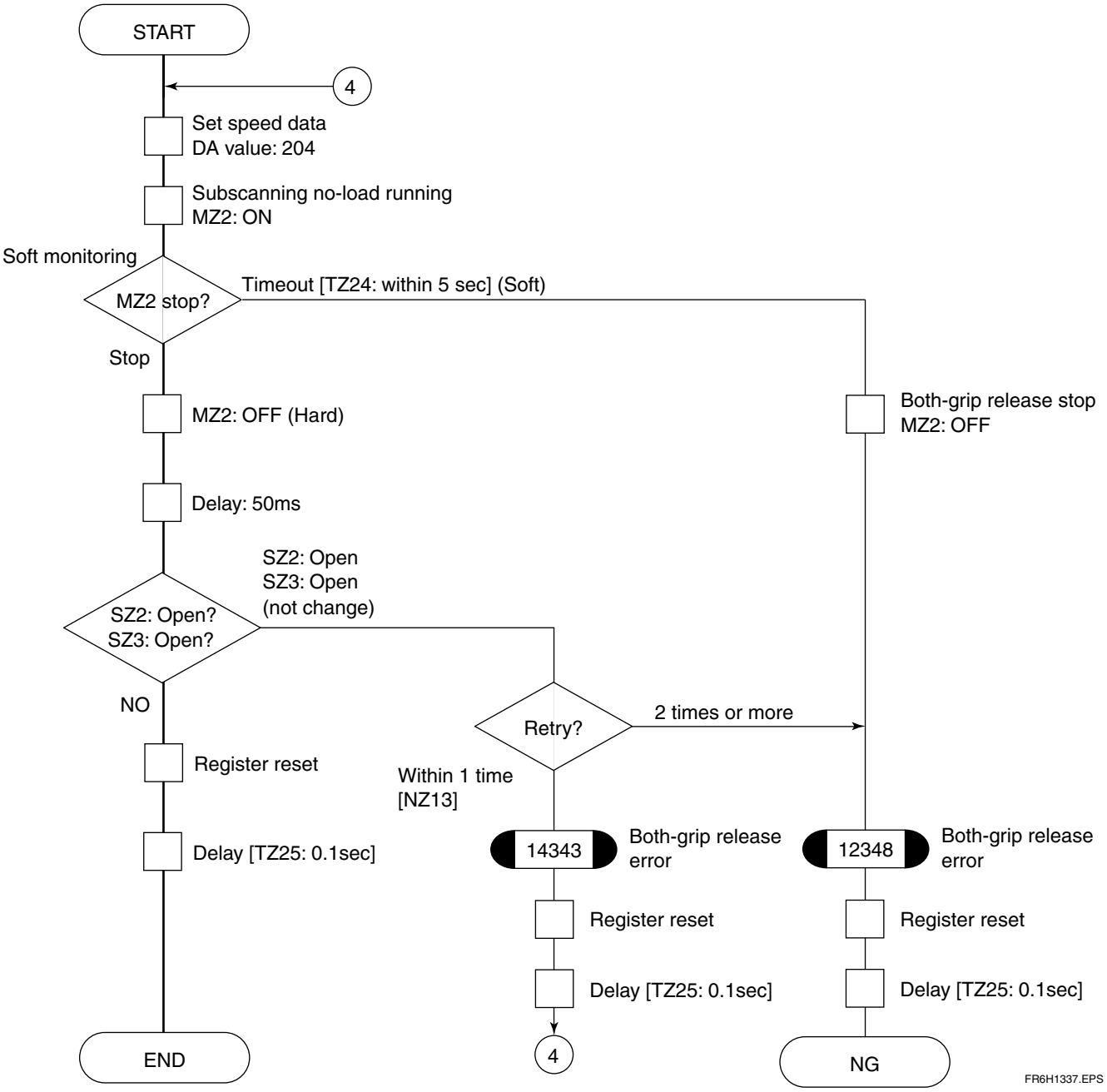
<Fig. 1 After-Reading Conveyance Flow>



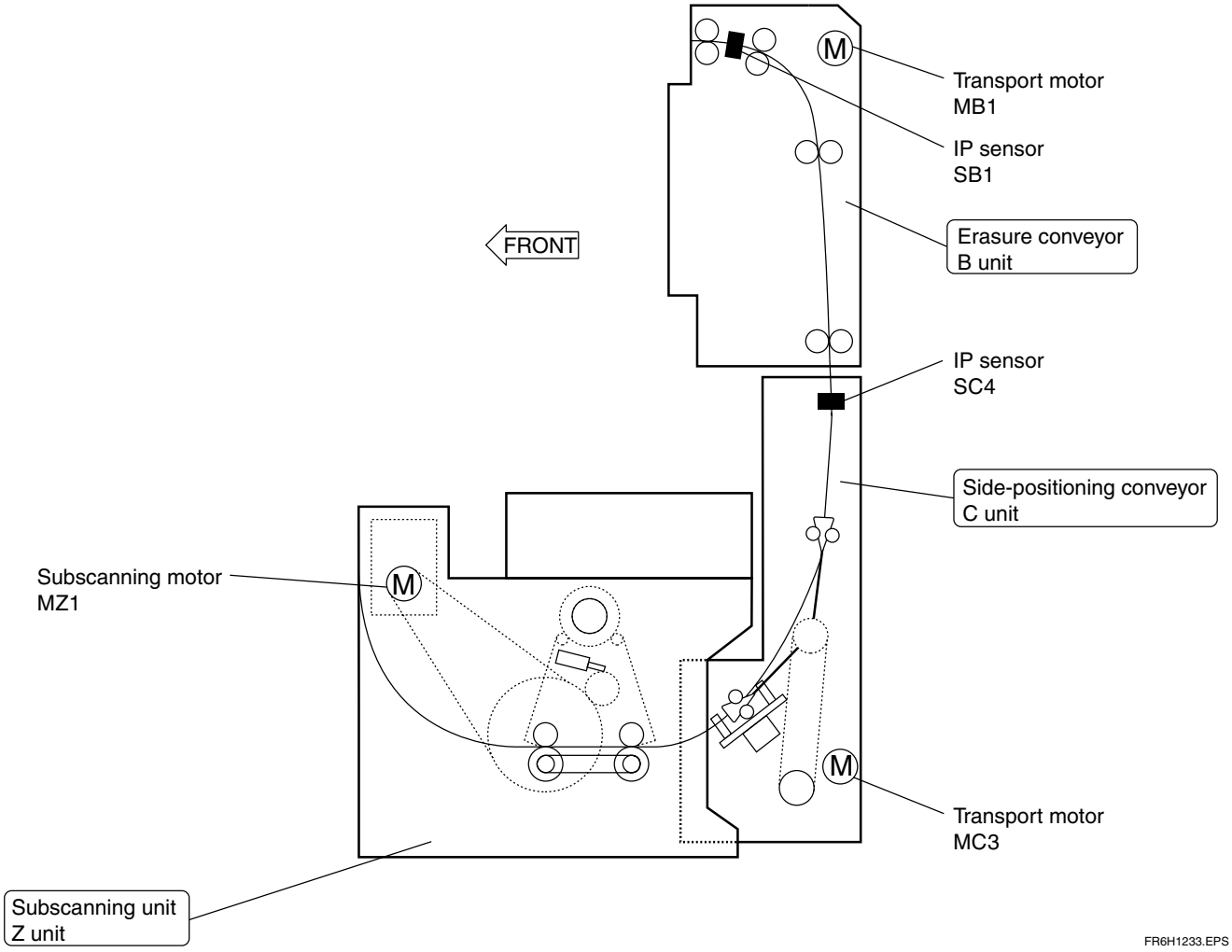
<Fig. 2 Subscanning No-Load Running Flow>



<Fig. 3 Subscanning Both-Grip Release Flow>



<I/O Locations>



FR6H1233.EPS

<I/O Table>

Symbol	Name	Type	Function
MZ1	Subscanning motor	FFM	Conveys the IP.
MB1	IP transport motor	Pulse motor	Conveys the IP.
MC3	IP transport motor	Pulse motor	Conveys the IP.
SC4	Erasure positioning IP sensor	PI (19mm)	Detects the IP.

TR6H1084.EPS

<Sensor ON/OFF Status>

SC4

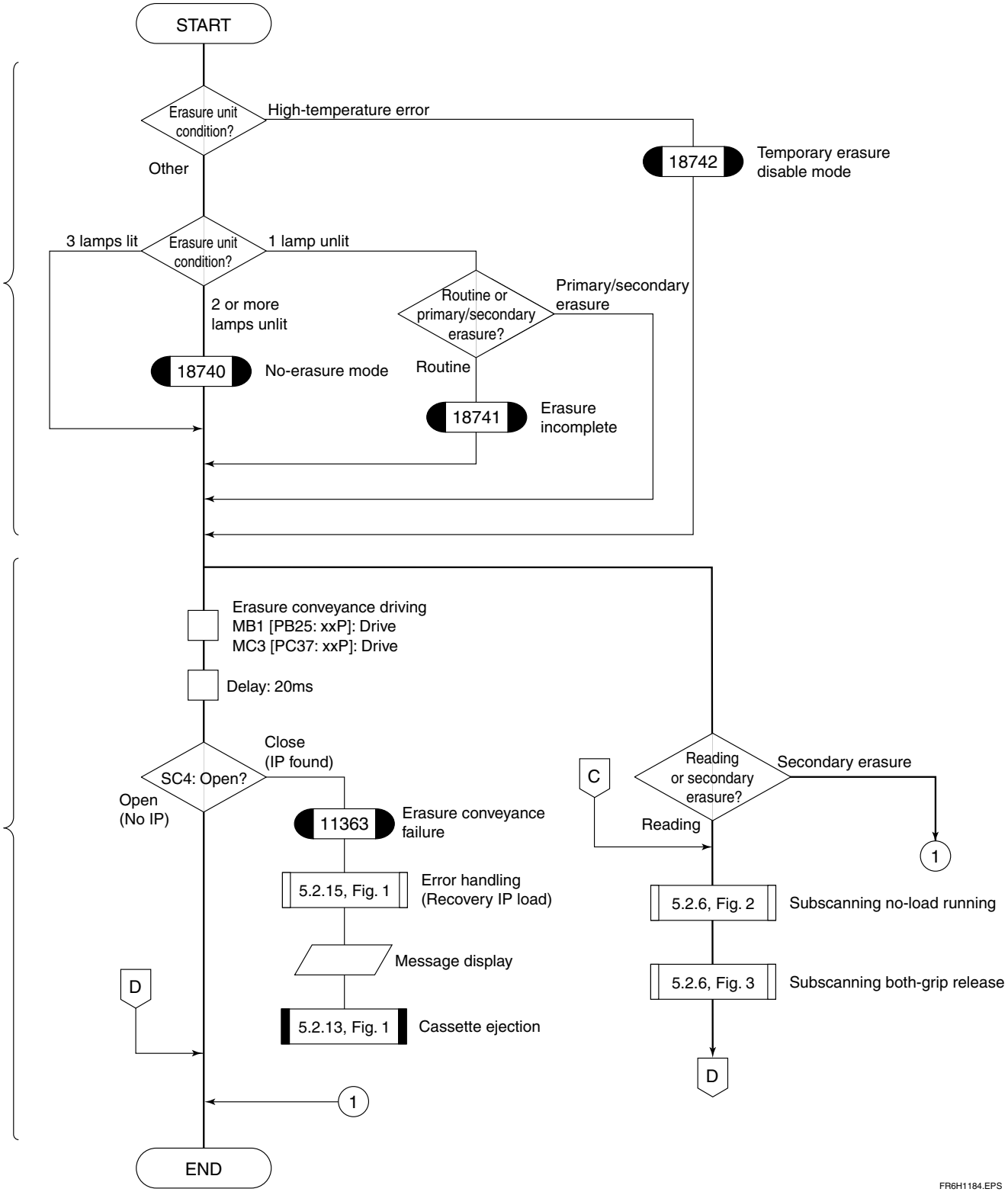
OFF: Open (no IP)

ON: Close (IP found)

FR6H1257.EPS

5.2.7 Erasure Conveyance

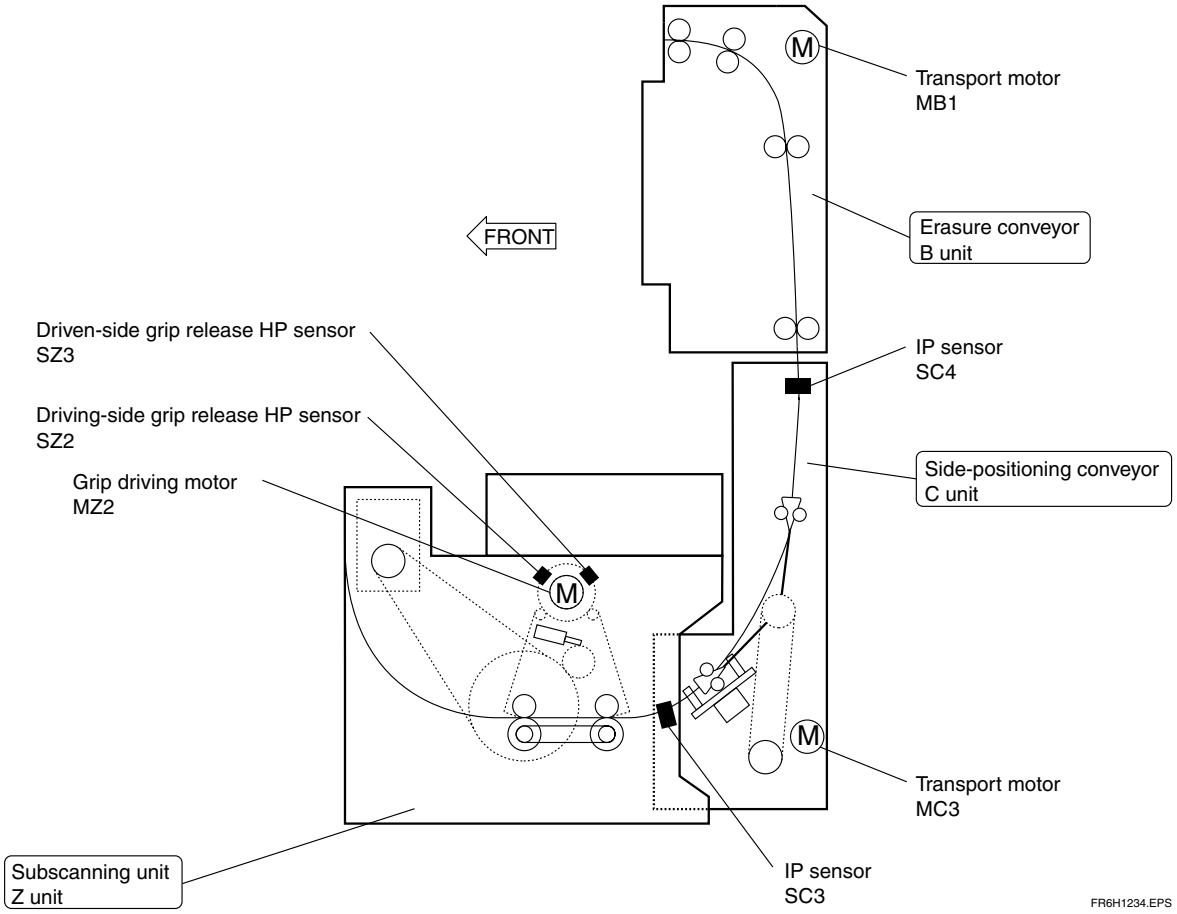
<Fig. 1 Erasure Conveyance Flow>



Symbol	Operation	IP size					
		14x17	14x14	10x12	8x10	Metric 18x24	Metric 24x30
PB25	Erasure conveyance driving	CCW14568P	CCW12624P	CCW11316P	CCW8706P	CCW8118P	CCW11190P
PC37	Erasure conveyance driving	CCW12140P	CCW10520P	CCW9430P	CCW7255P	CCW6765P	CCW9325P

TR6H1312.EPS

<I/O Locations>



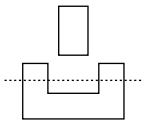
<I/O Table>

Symbol	Name	Type	Function
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).
LDSN	Unlit lamp sensor		
MB1	IP transport motor	Pulse motor	Conveys the IP.
MC3	IP transport motor	Pulse motor	Conveys the IP.
SC3	Side-positioning IP sensor	PI (19mm)	Detects the IP.
SC4	Erasure positioning IP sensor	PI (19mm)	Detects the IP.

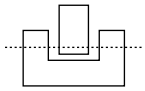
TR6H1080.EPS

<Sensor ON/OFF Status>

SZ2/SZ3

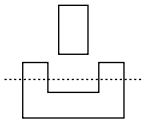


OFF: Open (not blocked)

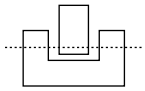


ON: Close (blocked)

SC3/SC4



OFF: Open (no IP)



ON: Close (IP found)

FR6H1258.EPS

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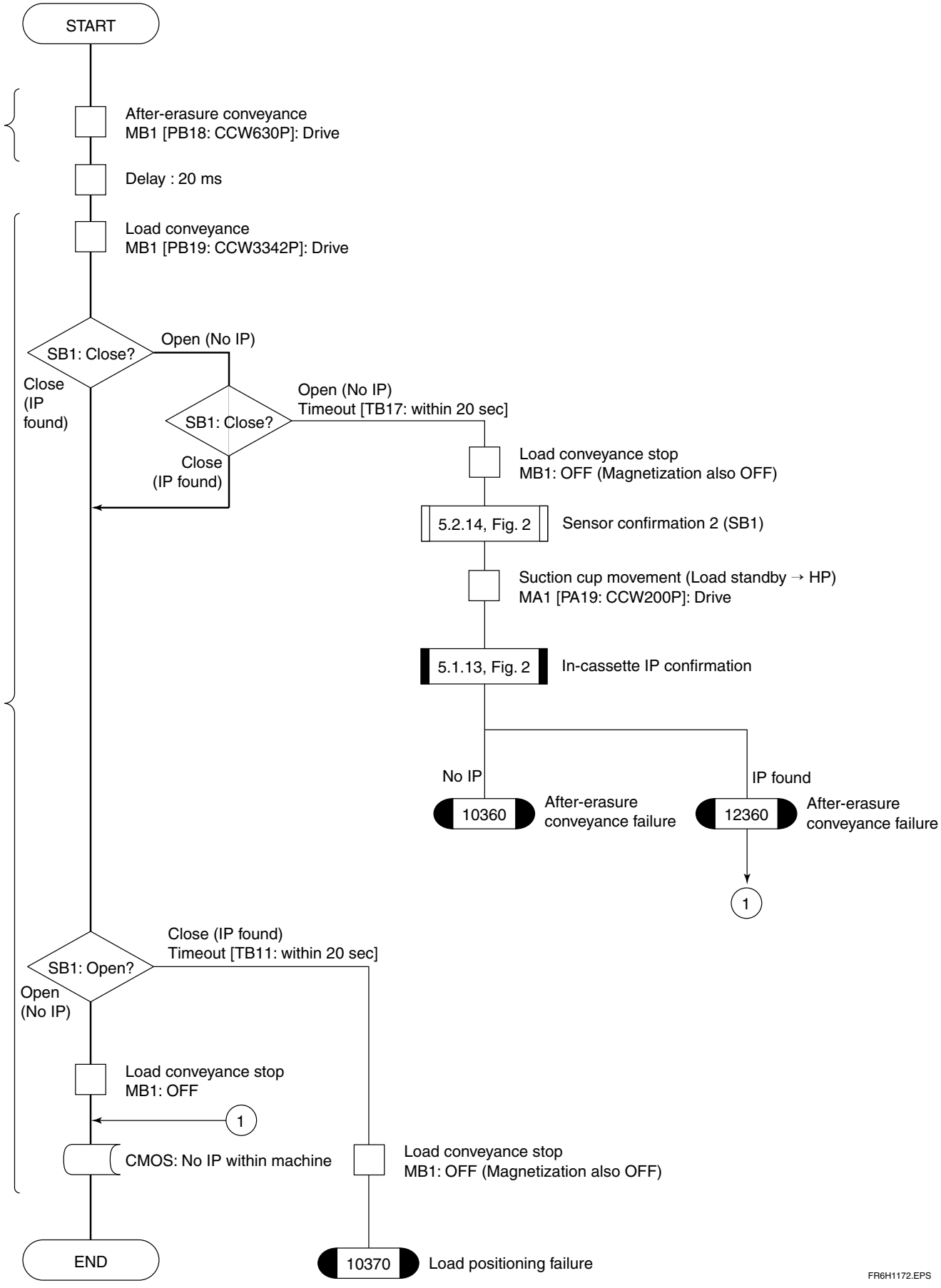
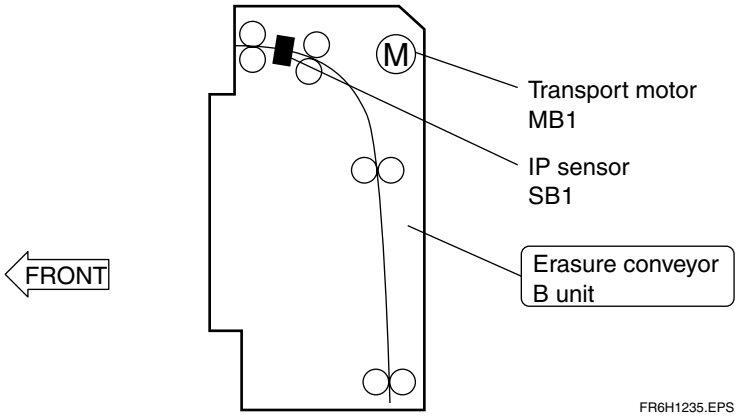
5.2.8 Load Conveyance

<Fig. 1 Load Conveyance Flow>



<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
MB1	IP transport motor	Pulse motor	Conveys the IP.
SB1	Cassette inlet IP sensor	PI (19mm)	Detects the presence of an IP.

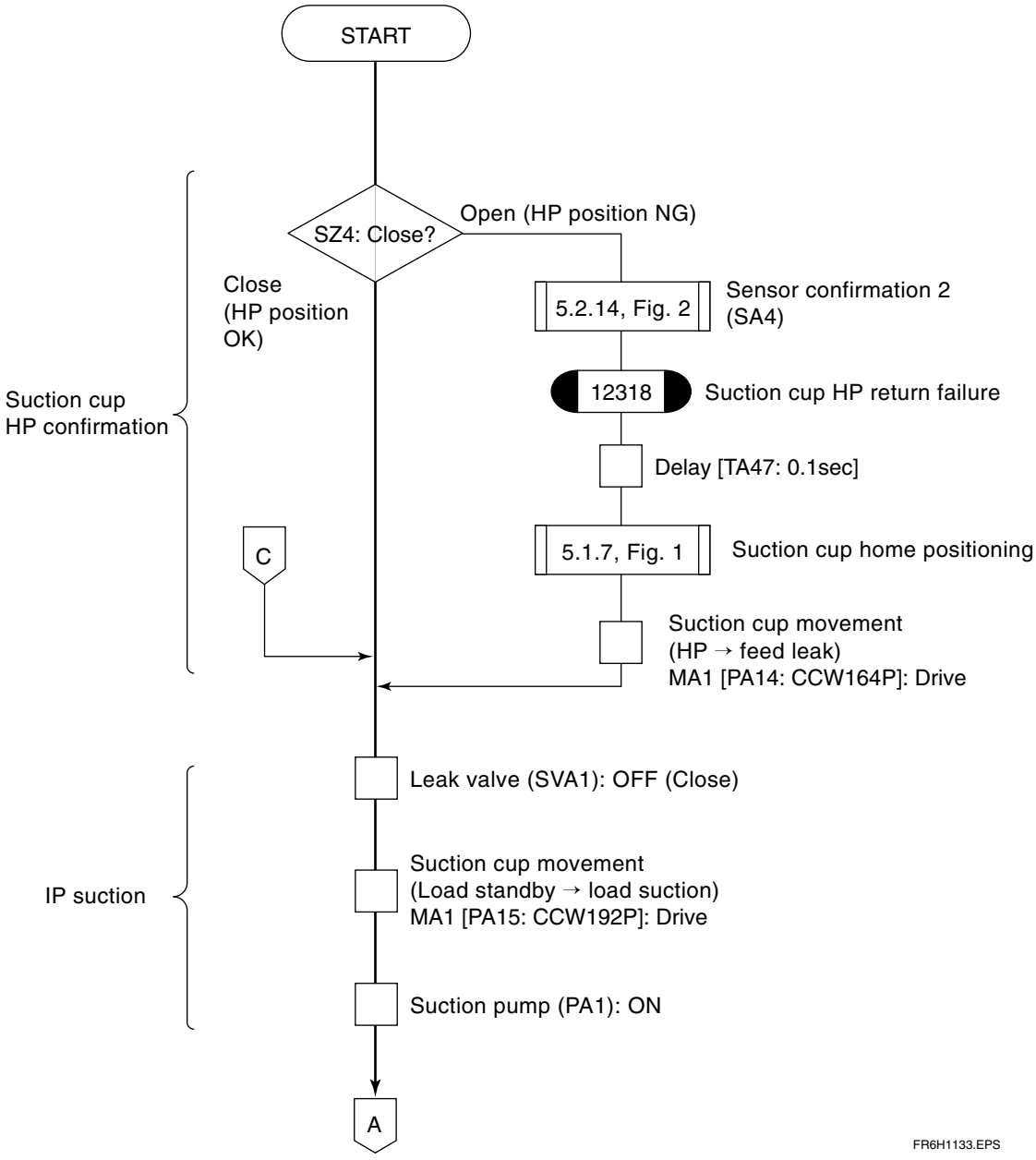
TR6H1078.EPS

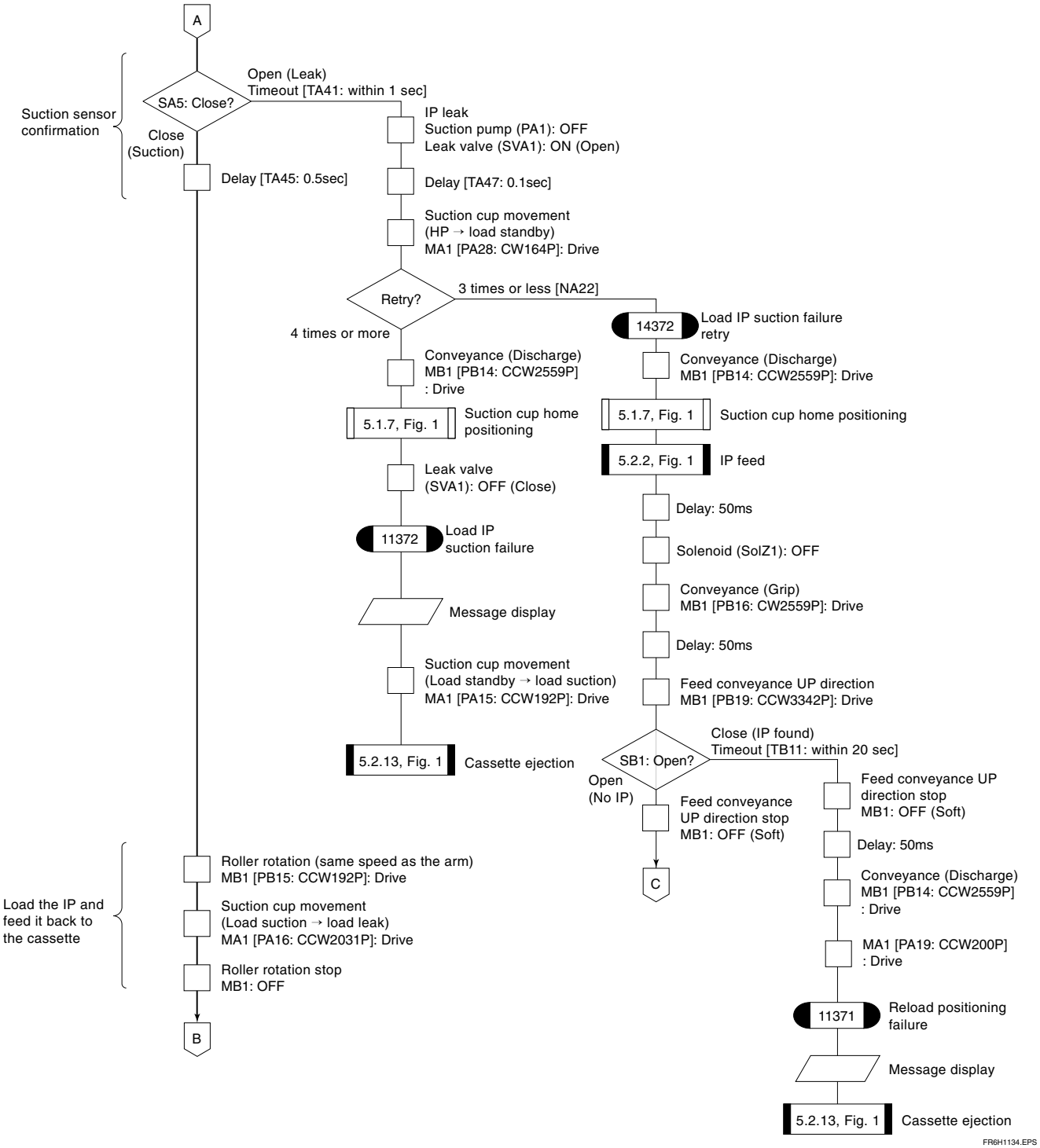
<Sensor ON/OFF Status>

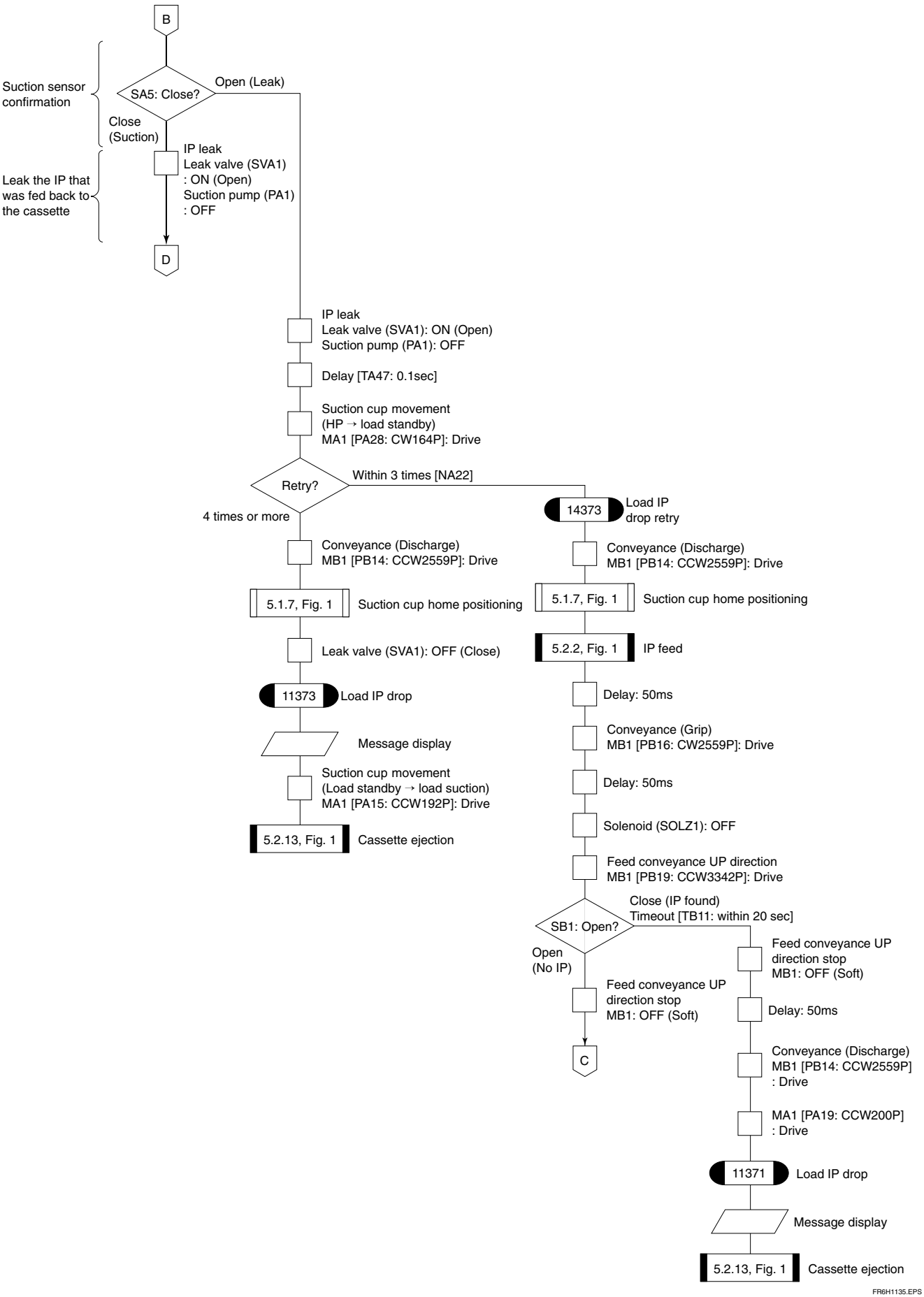
SB1

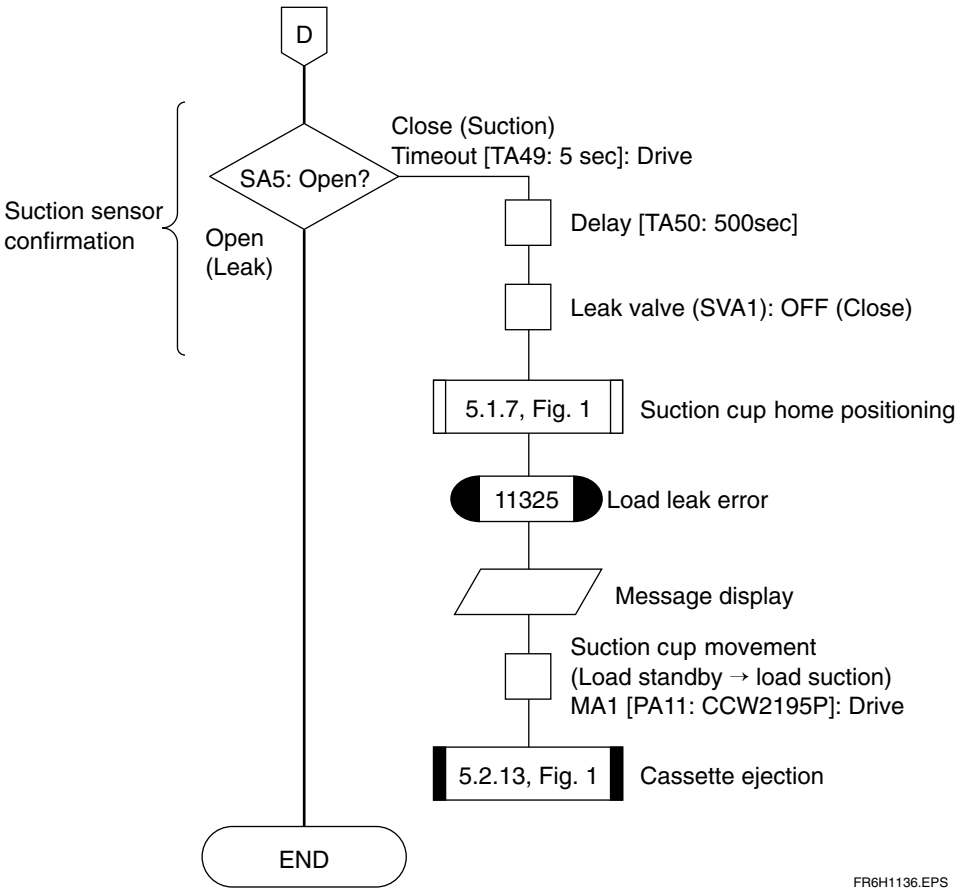
5.2.9 IP Load

<Fig. 1 IP Load Flow>

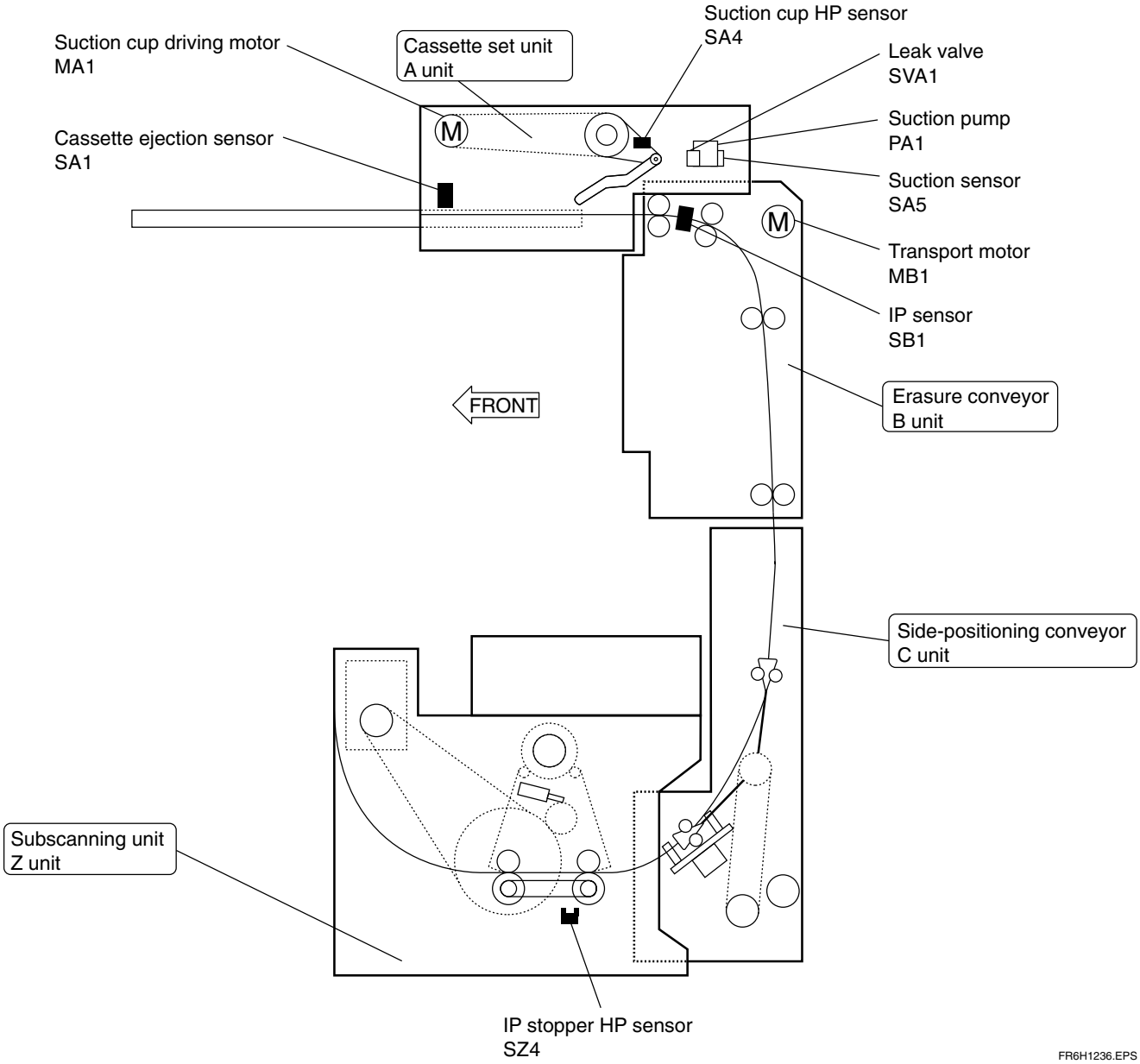



A
SA5: Close?
Open (Leak)
Timeout [TA41: within 1 sec]
Suction sensor confirmation
Close (Suction)
IP leak
Suction pump (PA1): OFF
Leak valve (SVA1): ON (Open)
Delay [TA45: 0.5sec]
Delay [TA47: 0.1sec]
Suction cup movement
(HP → load standby)
MA1 [PA28: CW164P]: Drive
Retry?
3 times or less [NA22]
4 times or more
14372
Load IP suction failure retry
Conveyance (Discharge)
MB1 [PB14: CCW2559P]
: Drive
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
5.1.7, Fig. 1
Suction cup home positioning
5.2.2, Fig. 1
IP feed
Leak valve
(SVA1): OFF (Close)
Delay: 50ms
11372
Load IP suction failure
Solenoid (SolZ1): OFF
Conveyance (Grip)
MB1 [PB16: CW2559P]: Drive
Message display
Delay: 50ms
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
Feed conveyance UP direction
MB1 [PB19: CCW3342P]: Drive
Close (IP found)
Timeout [TB11: within 20 sec]
SB1: Open?
Open (No IP)
5.2.13, Fig. 1
Cassette ejection
Feed conveyance UP direction stop
MB1: OFF (Soft)
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
C
Conveyance (Discharge)
MB1 [PB14: CCW2559P]
: Drive
MA1 [PA19: CCW200P]
: Drive
Load the IP and feed it back to the cassette
Roller rotation (same speed as the arm)
MB1 [PB15: CCW192P]: Drive
Suction cup movement
(Load suction → load leak)
MA1 [PA16: CCW2031P]: Drive
Roller rotation stop
MB1: OFF
11371
Reload positioning failure
Message display
5.2.13, Fig. 1
Cassette ejection
B
FR6H1134.EPS


B
Suction sensor confirmation
SA5: Close?
Open (Leak)
Close (Suction)
IP leak
Leak valve (SVA1) : ON (Open)
Suction pump (PA1) : OFF
Leak the IP that was fed back to the cassette
D
IP leak
Leak valve (SVA1): ON (Open)
Suction pump (PA1): OFF
Delay [TA47: 0.1sec]
Suction cup movement (HP → load standby)
MA1 [PA28: CW164P]: Drive
Retry?
Within 3 times [NA22]
4 times or more
14373
Load IP drop retry
Conveyance (Discharge)
MB1 [PB14: CCW2559P]: Drive
5.1.7, Fig. 1
Suction cup home positioning
Leak valve (SVA1): OFF (Close)
11373
Load IP drop
Message display
Suction cup movement (Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
5.2.13, Fig. 1
Cassette ejection
5.2.2, Fig. 1
IP feed
Delay: 50ms
Conveyance (Grip)
MB1 [PB16: CW2559P]: Drive
Solenoid (SOLZ1): OFF
Feed conveyance UP direction
MB1 [PB19: CCW3342P]: Drive
Close (IP found)
Timeout [TB11: within 20 sec]
SB1: Open?
Open (No IP)
Feed conveyance UP direction stop
MB1: OFF (Soft)
C
Feed conveyance UP direction stop
MB1: OFF (Soft)
Delay: 50ms
Conveyance (Discharge)
MB1 [PB14: CCW2559P]
: Drive
MA1 [PA19: CCW200P]
: Drive
11371
Load IP drop
Message display
5.2.13, Fig. 1
Cassette ejection
FR6H1135.EPS


D
SA5: Open?
Close (Suction)
Timeout [TA49: 5 sec]: Drive
Suction sensor confirmation
Open (Leak)
Delay [TA50: 500sec]
Leak valve (SVA1): OFF (Close)
5.1.7, Fig. 1
Suction cup home positioning
11325
Load leak error
Message display
Suction cup movement
(Load standby → load suction)
MA1 [PA11: CCW2195P]: Drive
5.2.13, Fig. 1
Cassette ejection
END
FR6H1136.EPS

<I/O Locations>



FR6H1236.EPS

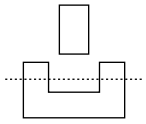
<I/O Table>

Symbol	Name	Type	Function
SA1	Cassette ejection sensor	PI (5mm)	Detects that the cassette has been ejected.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SA5	Suction sensor	Suction sensor	Detects that it is sucked.
SVA1	IP leak	Solenoid valve	Leaks when turned ON.
PA1	IP suction	DC pump	Sucks when turned ON
MA1	Suction cup driving motor	Pulse motor	Open the rear cover of the cassette and moves the roller.
MB1	IP transport motor	Pulse motor	Conveys the IP.
SB1	Cassette inlet IP sensor	PI (19mm)	Sensor that detects the presence of an IP.
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.

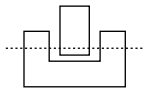
TR6H1065.EPS

<Sensor ON/OFF Status>

SA1/SA4/SA5/SZ4

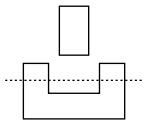


OFF: Open (not blocked)

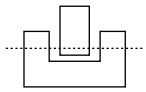


ON: Close (blocked)

SB1



OFF: Open (no IP)

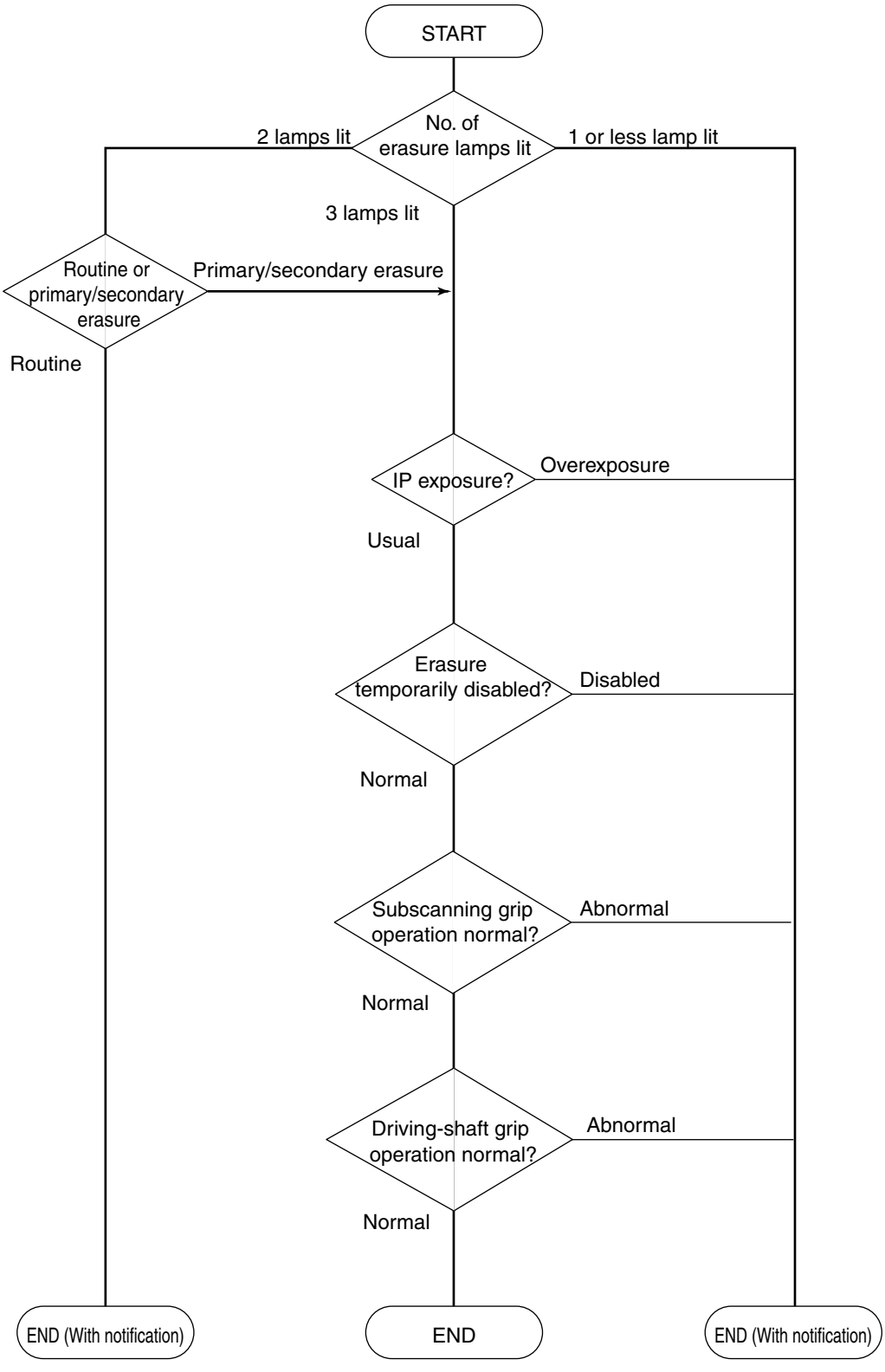


ON: Close (IP found)

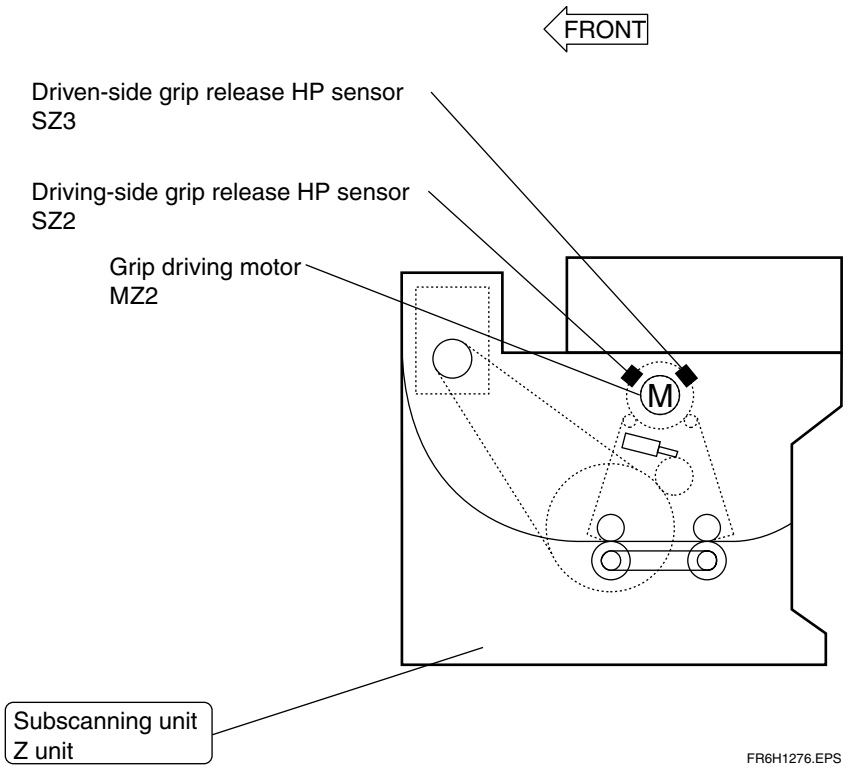
FR6H1260.EPS

5.2.10 User Notification Item Judgment

<Fig. 1 User Notification Item Judgment Flow>



<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).

TR6H1095.EPS

<Sensor ON/OFF Status>

SZ2/SZ3

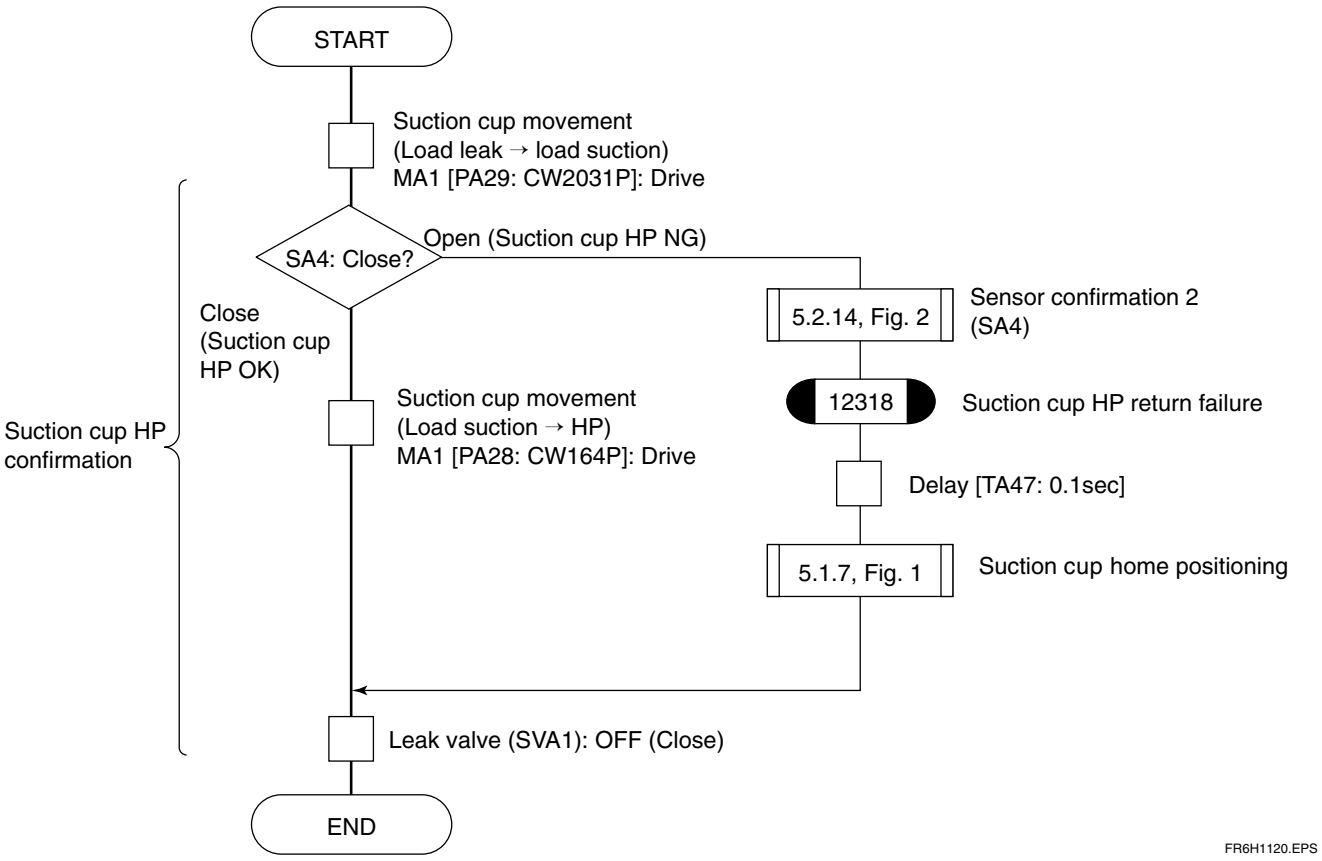
OFF: Open (not blocked)

ON: Close (blocked)

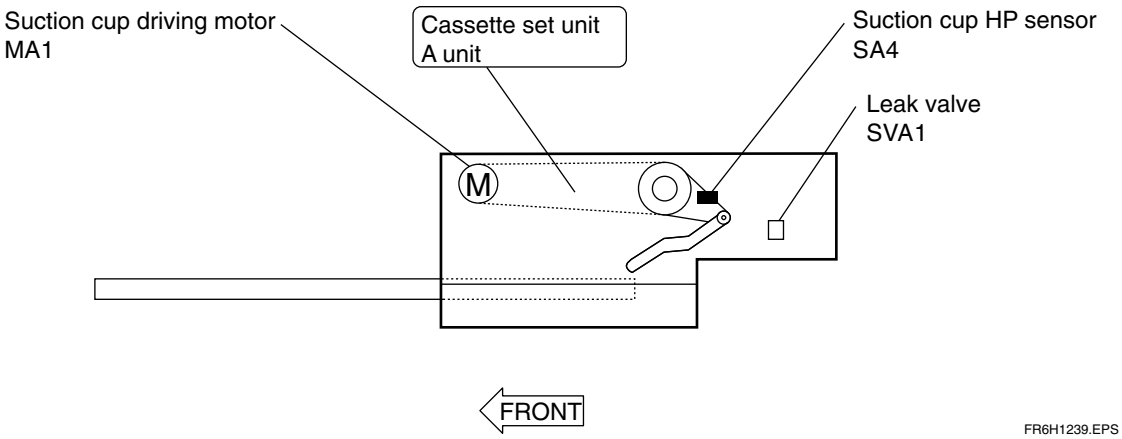
FR6H1277.EPS

5.2.11 IP Load Return (Without Cassette Ejection)

<Fig. 1 IP Load Return Flow>



<I/O Locations>



FR6H1239.EPS

<I/O Table>

Symbol	Name	Type	Function
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
SVA1	IP leak	Solenoid valve	Leaks when turned ON.
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.

TR6H1063.EPS

<Sensor ON/OFF Status>

SA4

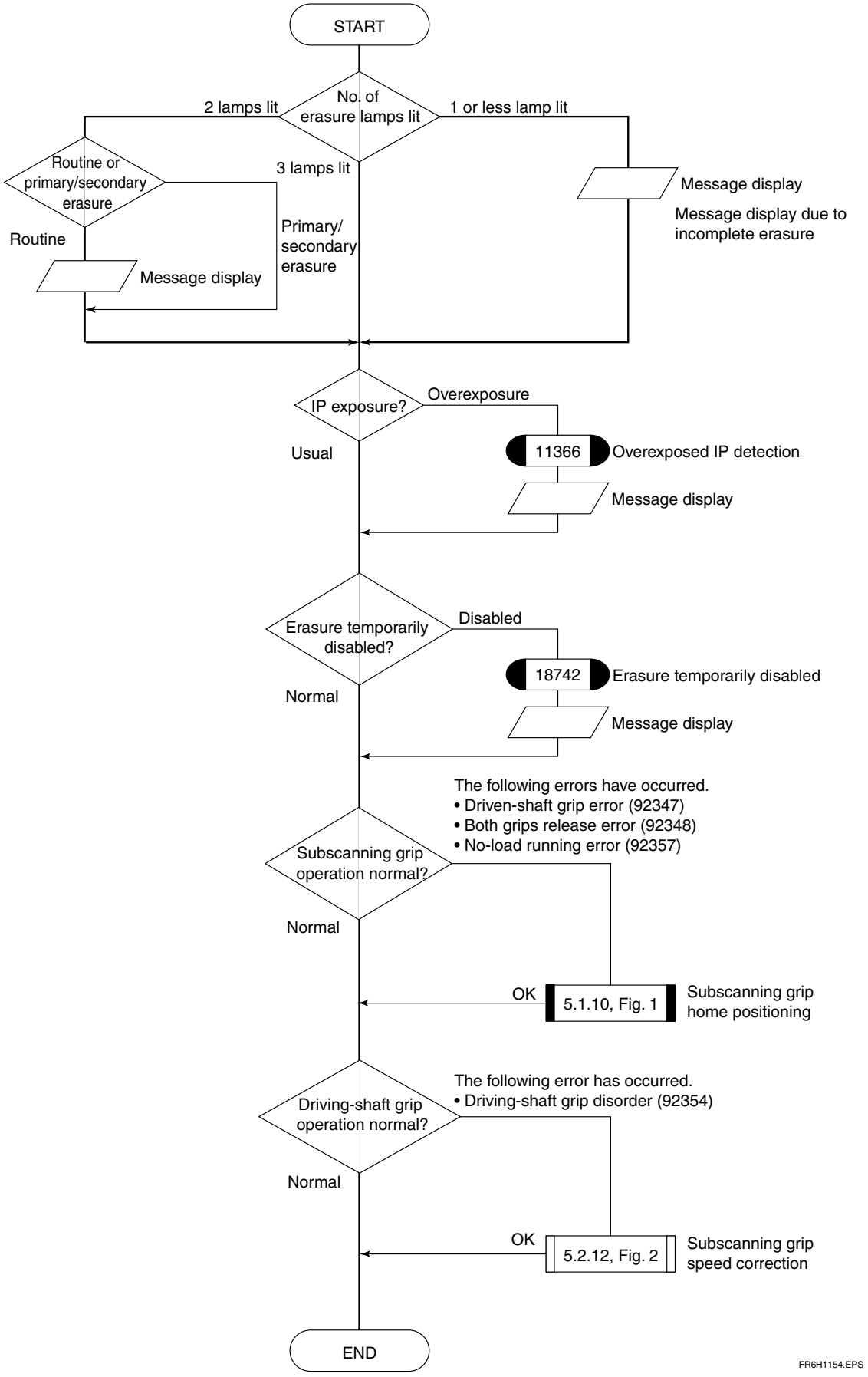
OFF: Open (not blocked)

ON: Close (blocked)

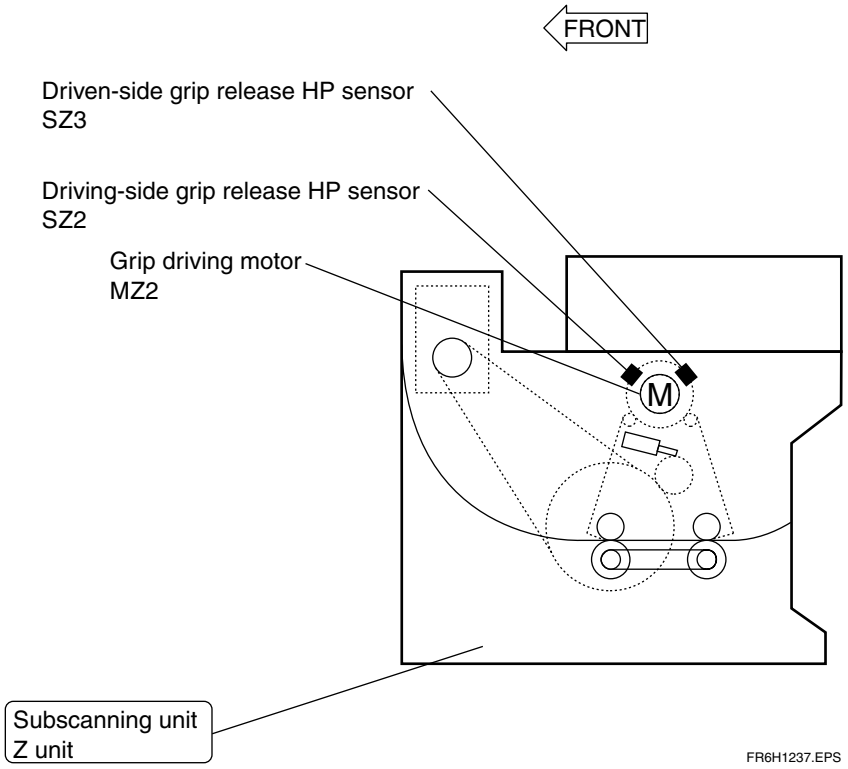
FR6H1263.EPS

5.2.12 User Notification Item Confirmation

<Fig. 1 User Notification Item Confirmation Flow>



<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).

TR6H1074.EPS

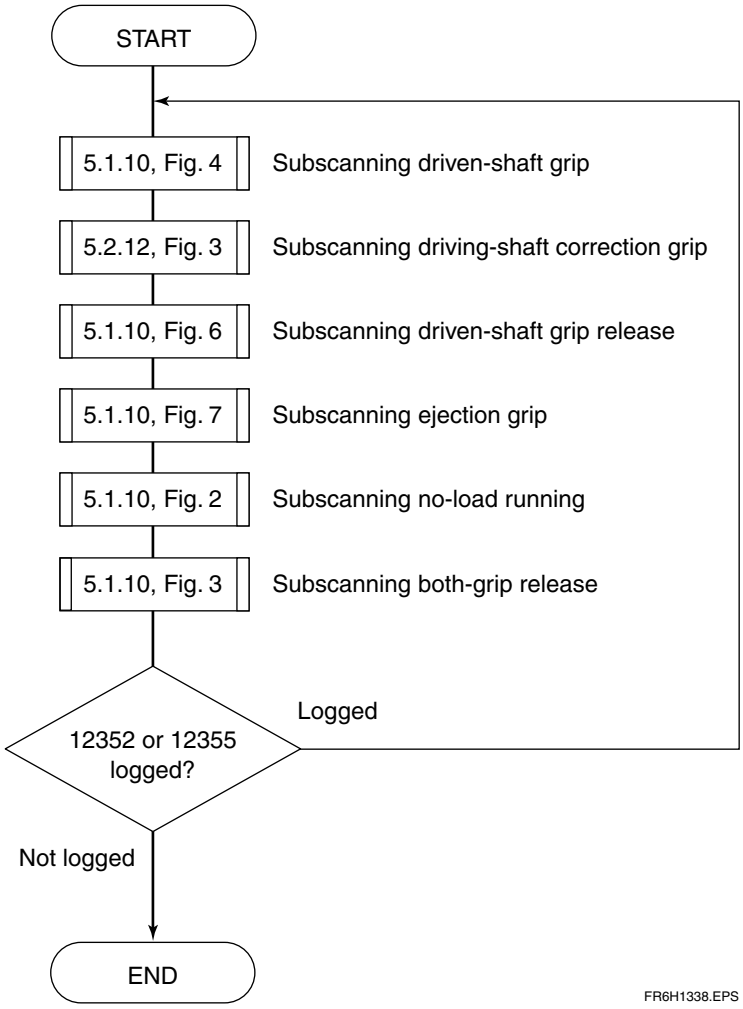
<Sensor ON/OFF Status>

SZ2/SZ3

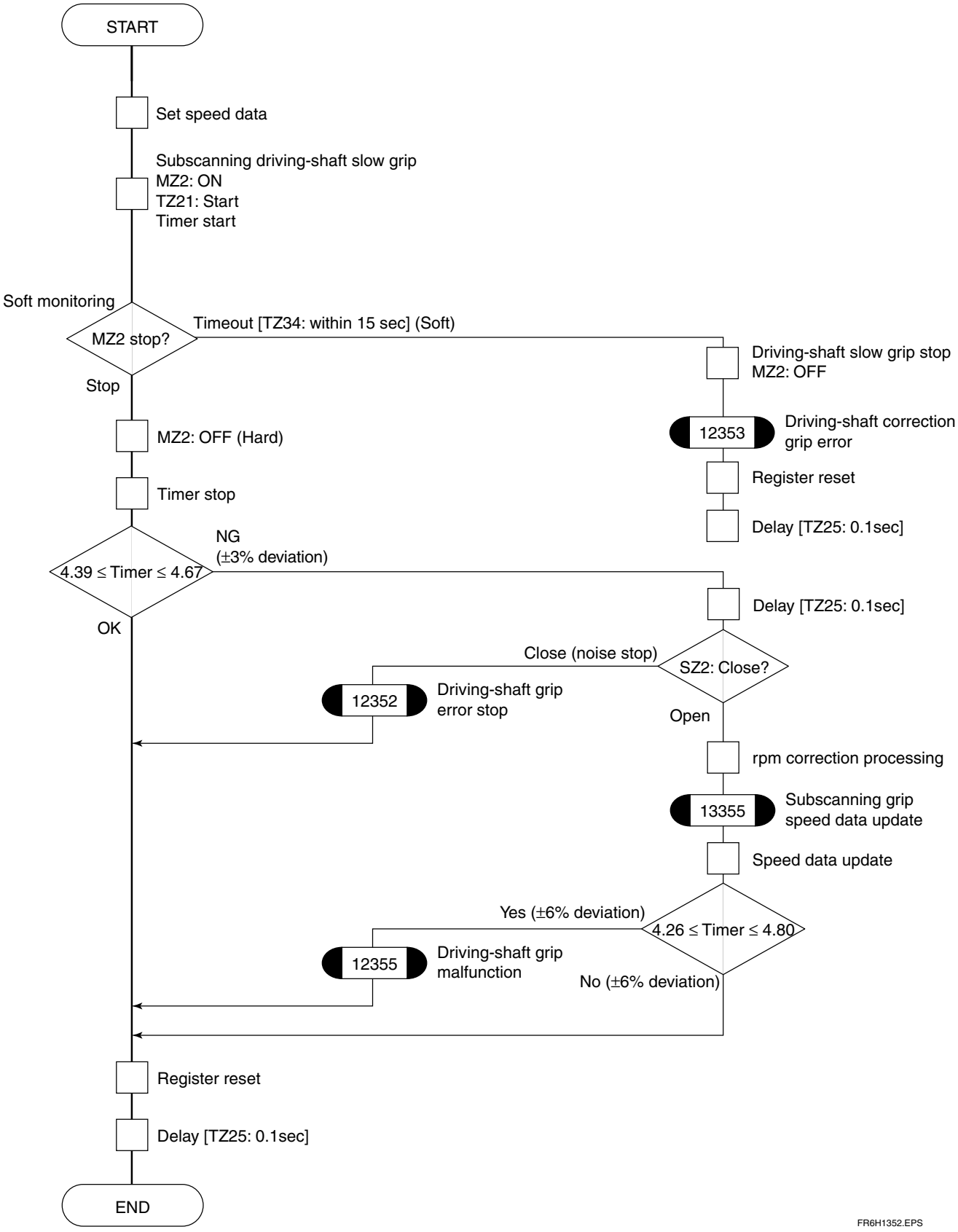
OFF: Open (not blocked) ON: Close (blocked)

FR6H1261.EPS

<Fig. 2 Subscanning Grip Speed Correction>

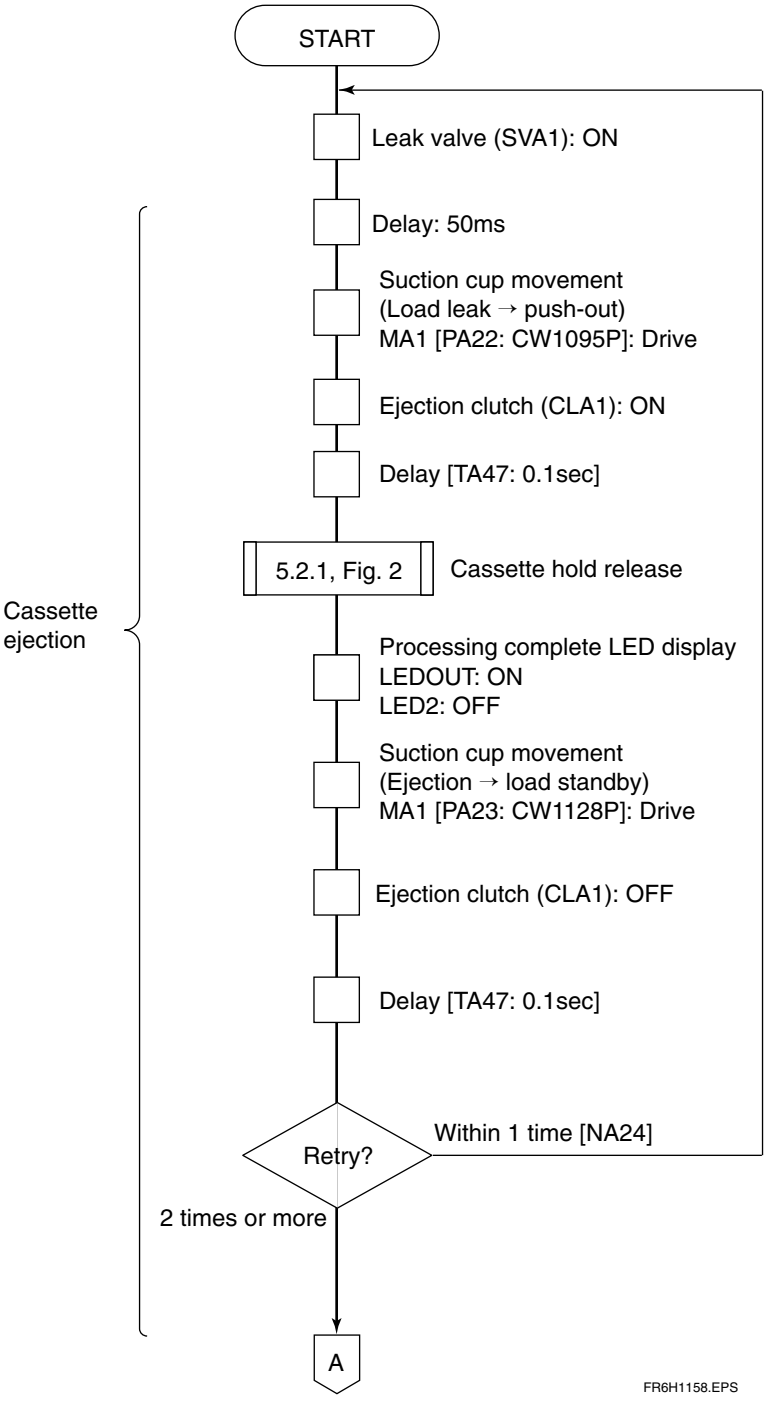


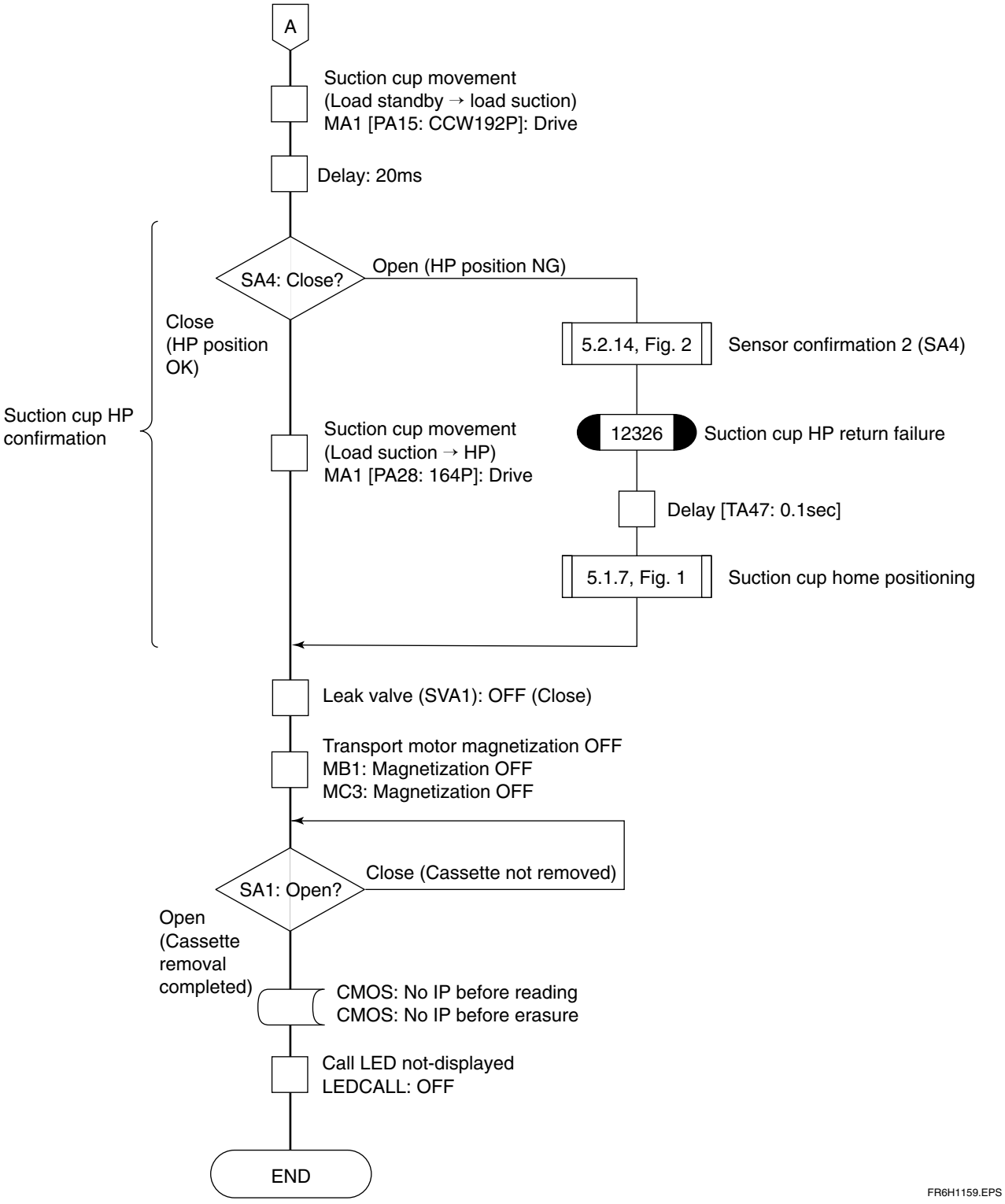
<Fig. 3 Subscanning Driving-Shaft Correction Grip Flow>



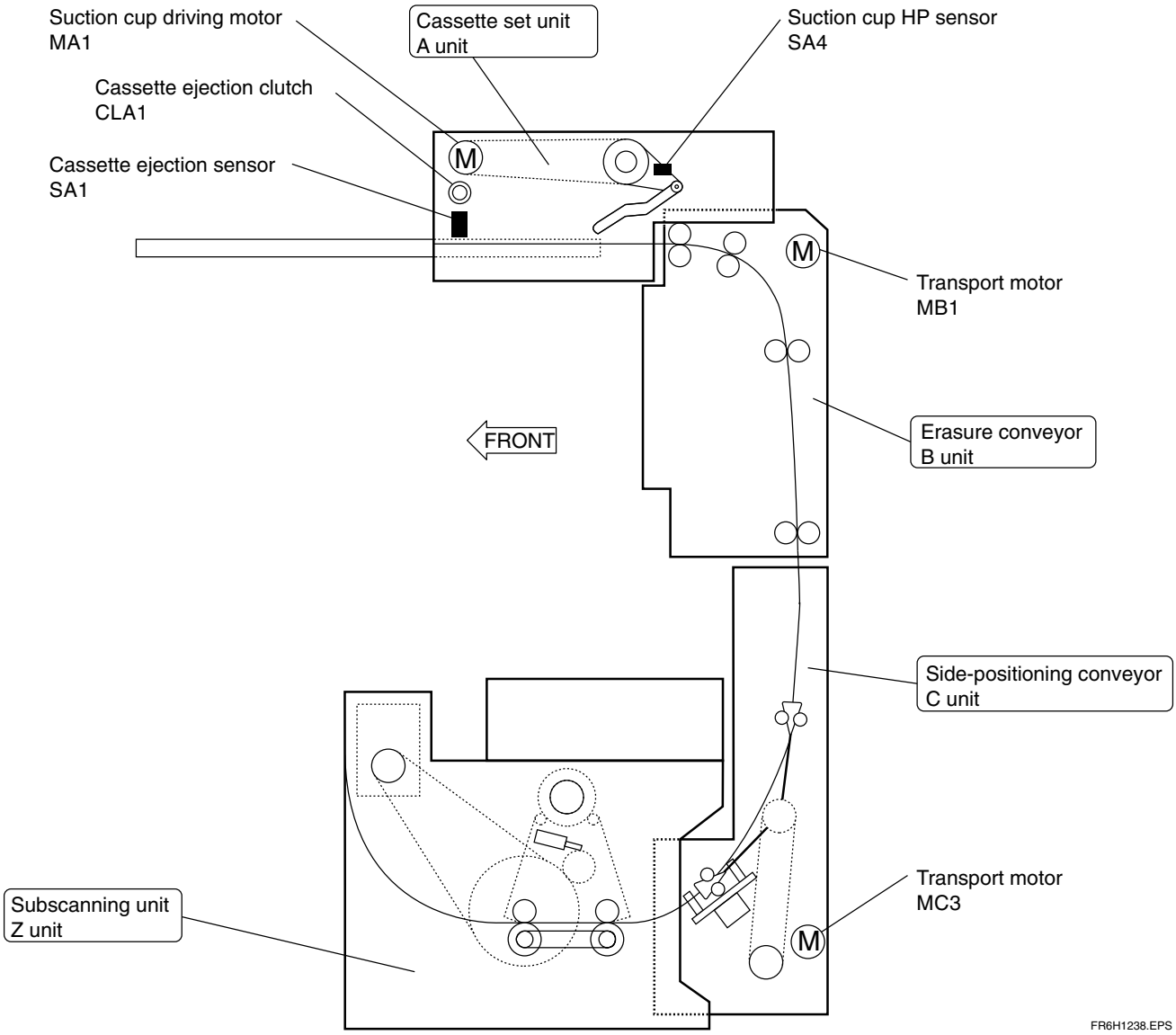
5.2.13 Cassette Ejection

<Fig. 1 Cassette Ejection Flow>




A
Suction cup movement
(Load standby → load suction)
MA1 [PA15: CCW192P]: Drive
Delay: 20ms
SA4: Close?
Open (HP position NG)
Close
(HP position
OK)
5.2.14, Fig. 2
Sensor confirmation 2 (SA4)
Suction cup HP
confirmation
Suction cup movement
(Load suction → HP)
MA1 [PA28: 164P]: Drive
12326
Suction cup HP return failure
Delay [TA47: 0.1sec]
5.1.7, Fig. 1
Suction cup home positioning
Leak valve (SVA1): OFF (Close)
Transport motor magnetization OFF
MB1: Magnetization OFF
MC3: Magnetization OFF
SA1: Open?
Close (Cassette not removed)
Open
(Cassette
removal
completed)
CMOS: No IP before reading
CMOS: No IP before erasure
Call LED not-displayed
LEDCALL: OFF
END
FR6H1159.EPS

<I/O Locations>



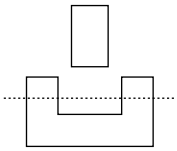
<I/O Table>

Symbol	Name	Type	Function
LEDCALL	CALL	LED	Indicates that the machine is in "CALL" state.
LEDOUT	Processing complete	LED	Indicates that the processing has been completed.
LED2	Progress 2	LED	Indicates that the progress is "2".
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.
SA1	Cassette ejection sensor	PI (5mm)	Detects that the cassette has been ejected.
SA4	Suction cup HP sensor	PI (5mm)	Detects that the suction cup is in its home position.
MB1	IP transport motor	Pulse motor	Conveys the IP.
MC3	IP transport motor	Pulse motor	Conveys the IP.
CLA1	Cassette ejection clutch	Clutch	Power connection for actuating cassette ejection operation.

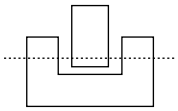
TR6H1073.EPS

<Sensor ON/OFF Status>

SA1/SA4



OFF: Open (not blocked)



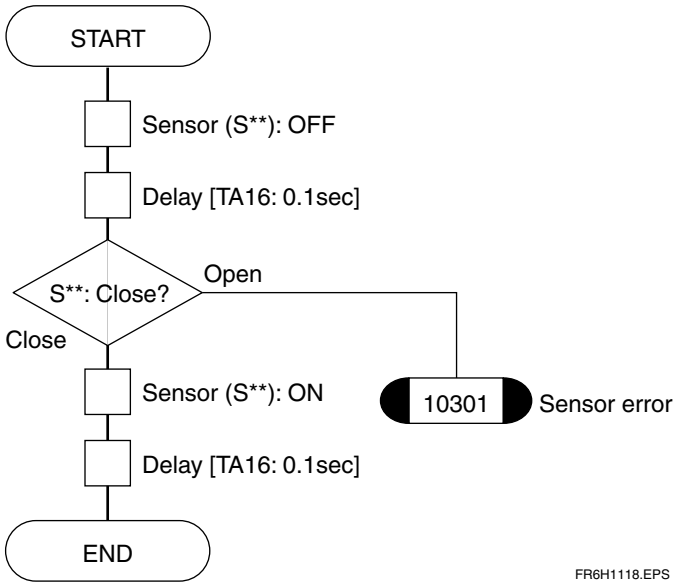
ON: Close (blocked)

FR6H1262.EPS

5.2.14 Sensor Confirmation 1/Sensor Confirmation 2

<Fig. 1 Sensor Confirmation 1 Flow>

A symbol, “S**”, used in the flow is applicable to the sensors listed in the table (Sensor List) below.



<Sensor List>

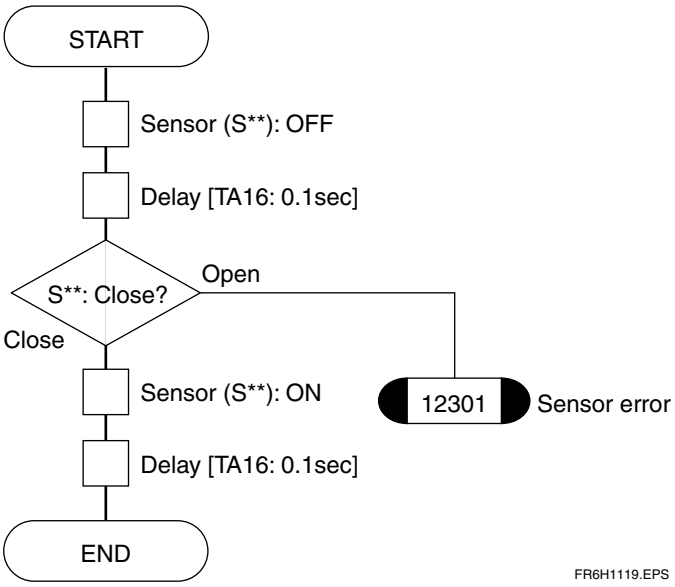
The sensors listed below are covered by “S**”.

I/O No.	Name	Close status	Open status
SA1	Cassette ejection sensor	Blocked	Not blocked
SA2	Cassette IN sensor	With cassette	Without cassette
SA3	Cassette hold sensor	Blocked	Not blocked
SA4	Suction cup HP sensor	Blocked	Not blocked
SA5	Suction sensor	Sucked	Leaked
SB1	Cassette inlet IP sensor	IP found	No IP
SC1	Side-positioning HP sensor	Blocked	Not blocked
SC2	Grip release HP sensor	Blocked	Not blocked
SC3	Side-positioning HP sensor	IP found	No IP
SC4	Erasure positioning IP sensor	IP found	No IP
SZ2	Driving-side grip release HP sensor	Blocked	Not blocked
SZ3	Driven-side grip release HP sensor	Blocked	Not blocked
SZ4	Stopper HP sensor	Blocked	Not blocked
SZ5	Dust removal HP sensor	Blocked	Not blocked

TR6H1070.EPS

<Fig. 2 Sensor Confirmation 2 Flow>

A symbol, “S**”, used in the flow is applicable to the sensors listed in the table (Sensor List) below.



<Sensor List>

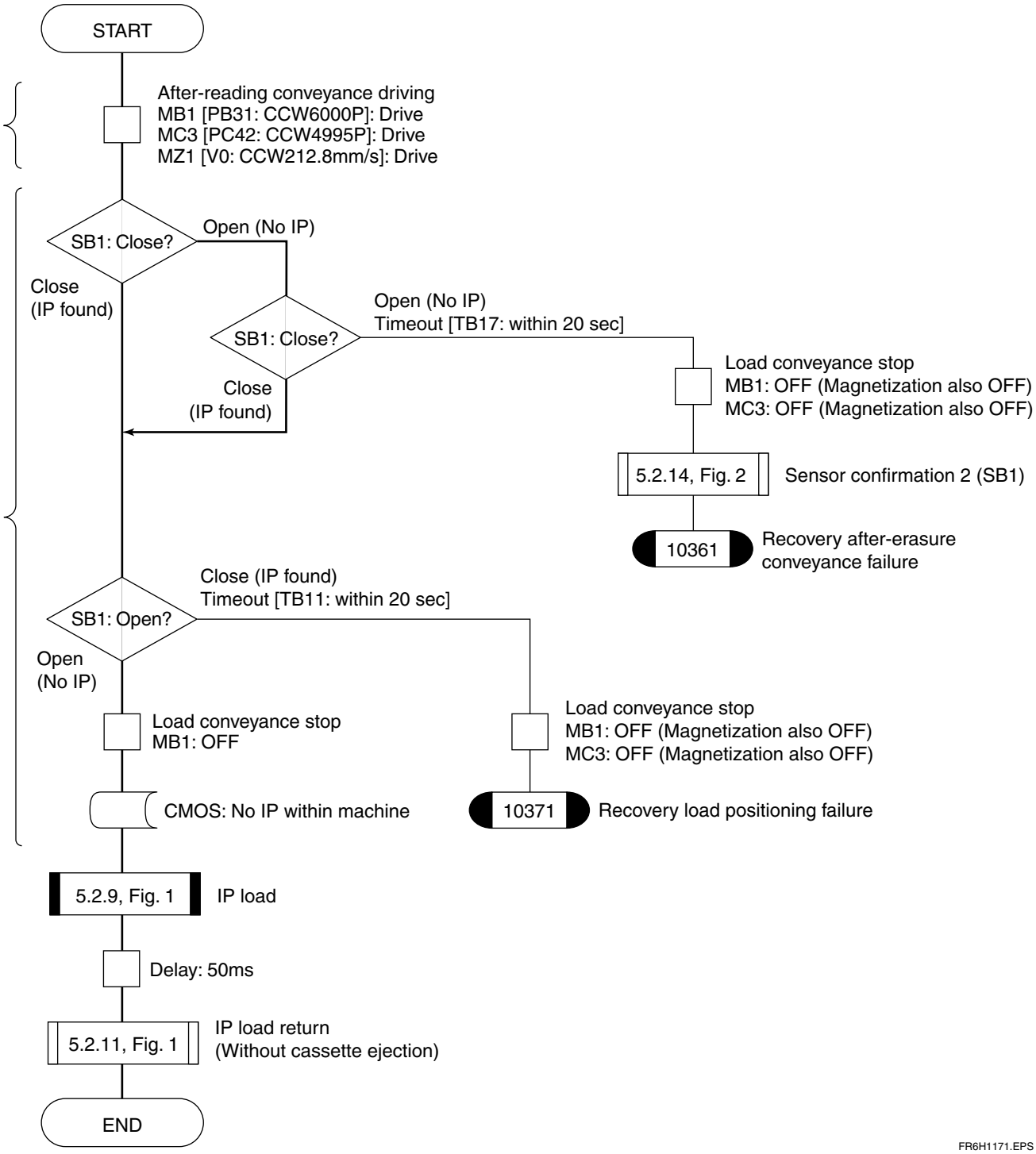
The sensors listed below are covered by “S**”.

I/O No.	Name	Close status	Open status
SA1	Cassette ejection sensor	Blocked	Not blocked
SA2	Cassette IN sensor	With cassette	Without cassette
SA3	Cassette hold sensor	Blocked	Not blocked
SA4	Suction cup HP sensor	Blocked	Not blocked
SA5	Suction sensor	Sucked	Leaked
SB1	Cassette inlet IP sensor	IP found	No IP
SC1	Side-positioning HP sensor	Blocked	Not blocked
SC2	Grip release HP sensor	Blocked	Not blocked
SC3	Side-positioning HP sensor	IP found	No IP
SC4	Erasure positioning IP sensor	IP found	No IP
SZ2	Driving-side grip release HP sensor	Blocked	Not blocked
SZ3	Driven-side grip release HP sensor	Blocked	Not blocked
SZ4	Stopper HP sensor	Blocked	Not blocked
SZ5	Dust removal HP sensor	Blocked	Not blocked

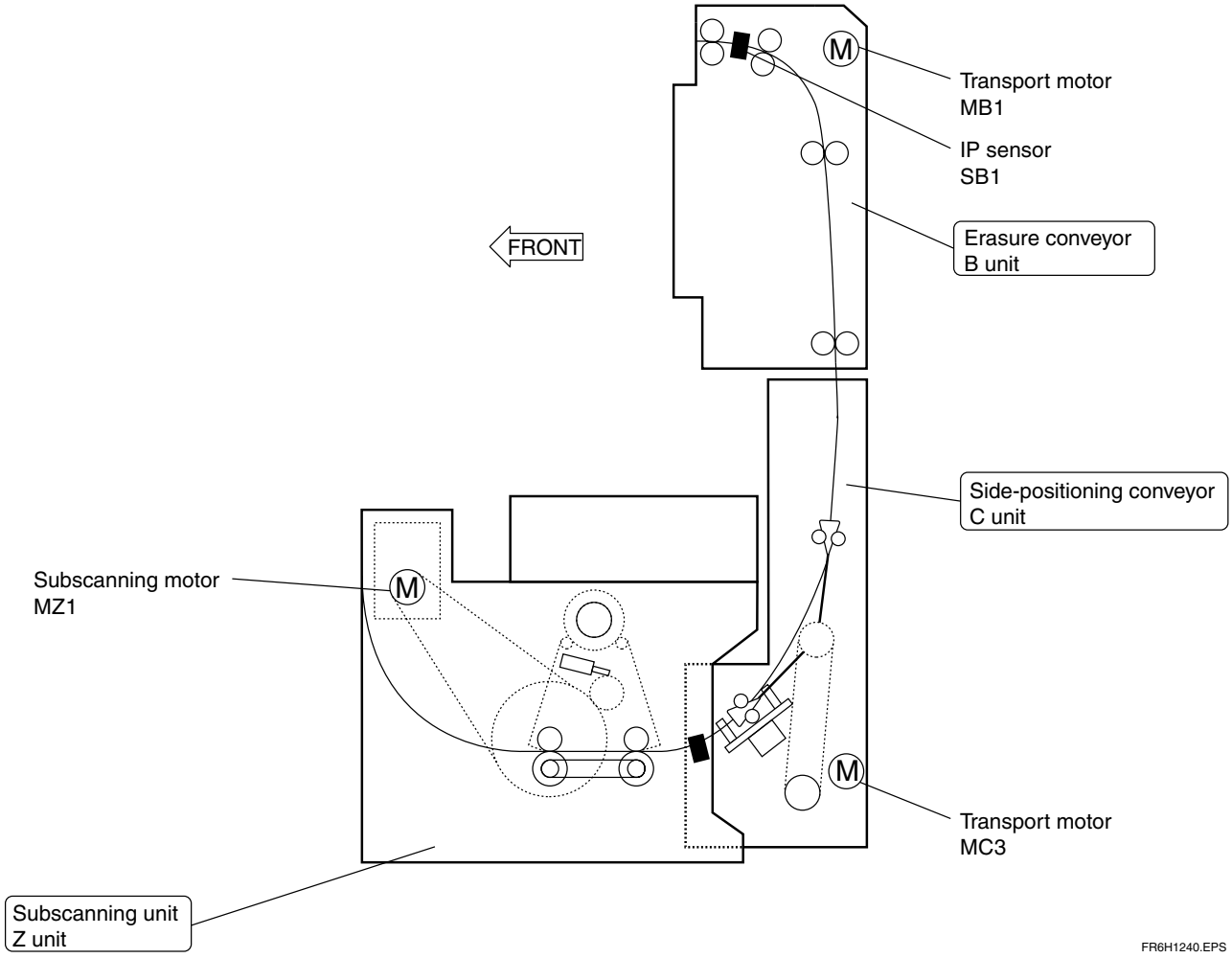
TR6H1070.EPS

5.2.15 Error Handling (Recovery IP Load)

<Fig. 1 Error Handling Flow>



<I/O Locations>



FR6H1240.EPS

<I/O Table>

Symbol	Name	Type	Function
SB1	Cassette inlet IP sensor	PI (19mm)	Detects the presence of an IP.
MB1	IP transport motor	Pulse motor	Conveys the IP.
MC3	IP transport motor	Pulse motor	Conveys the IP.
MZ1	Subscanning motor	FFM	Conveys the IP.

TR6H1083.EPS

<Sensor ON/OFF Status>

SB1

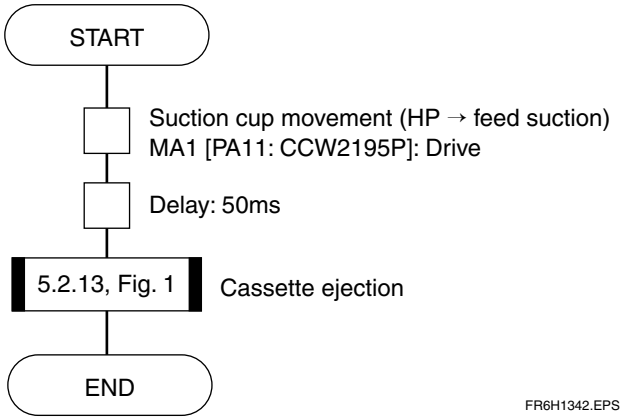
OFF: Open (no IP)

ON: Close (IP found)

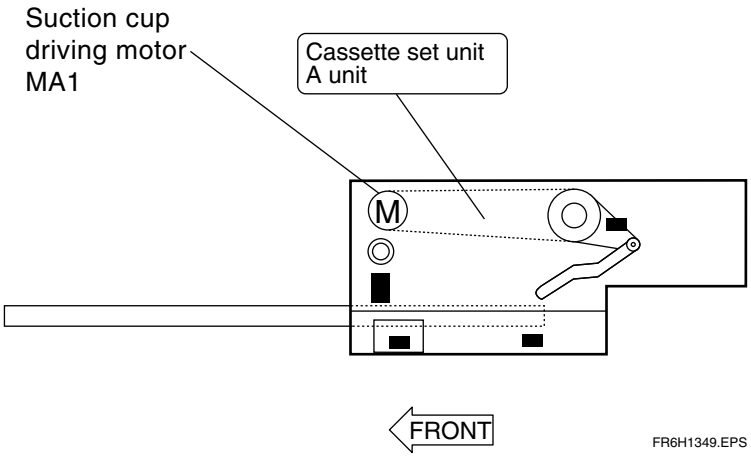
FR6H1264.EPS

5.2.16 Cassette Ejection (After Home Positioning)

<Fig. 1 Cassette Ejection (After Home Positioning) Flow>



<I/O Locations>



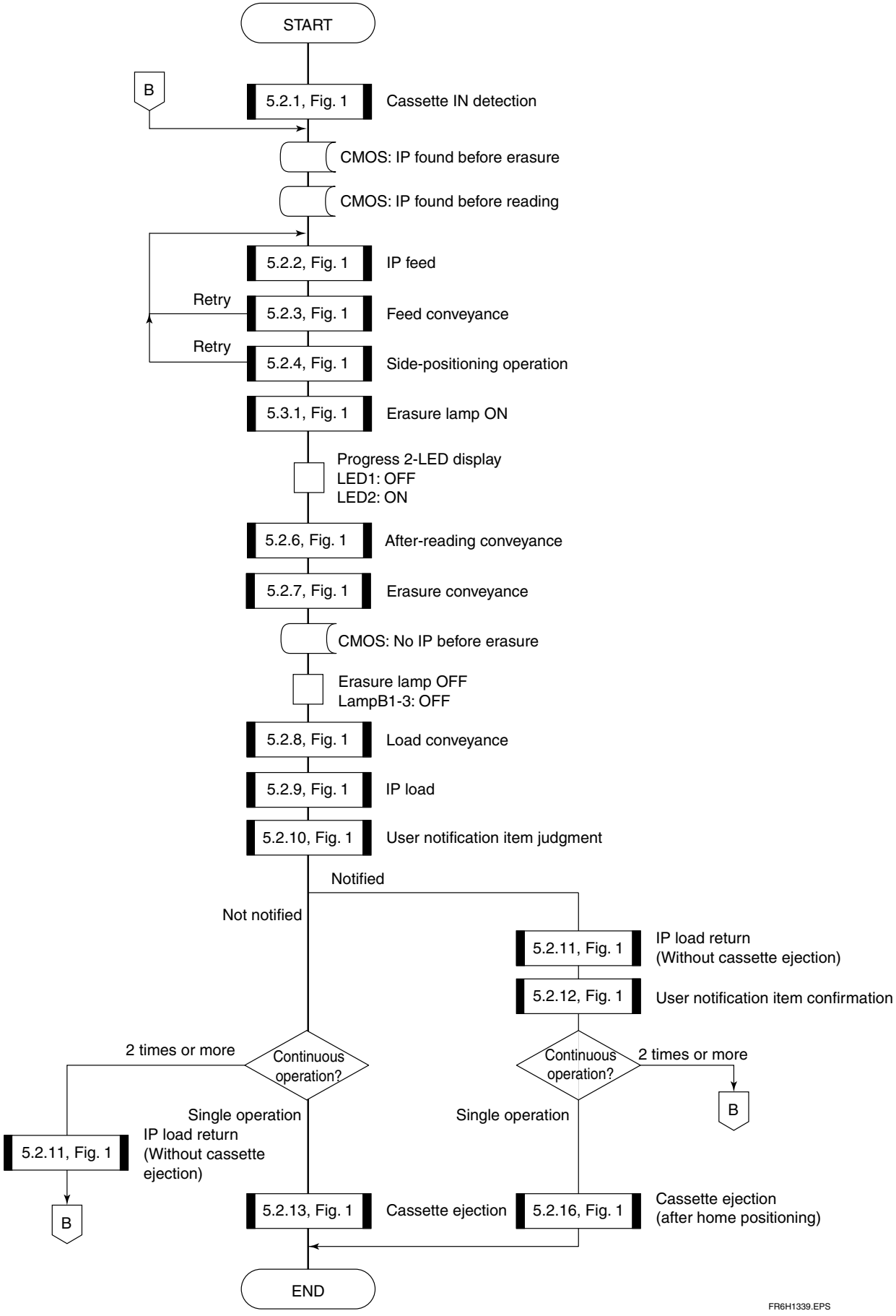
<I/O Table>

Symbol	Name	Type	Function
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.

TR6H1097.EPS

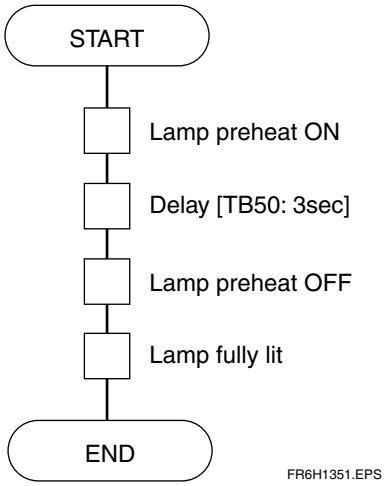
5.3 Secondary Erasure Flow

<Fig. 1 Overall Summary Flow>



5.3.1 Erasure Lamp Lighting

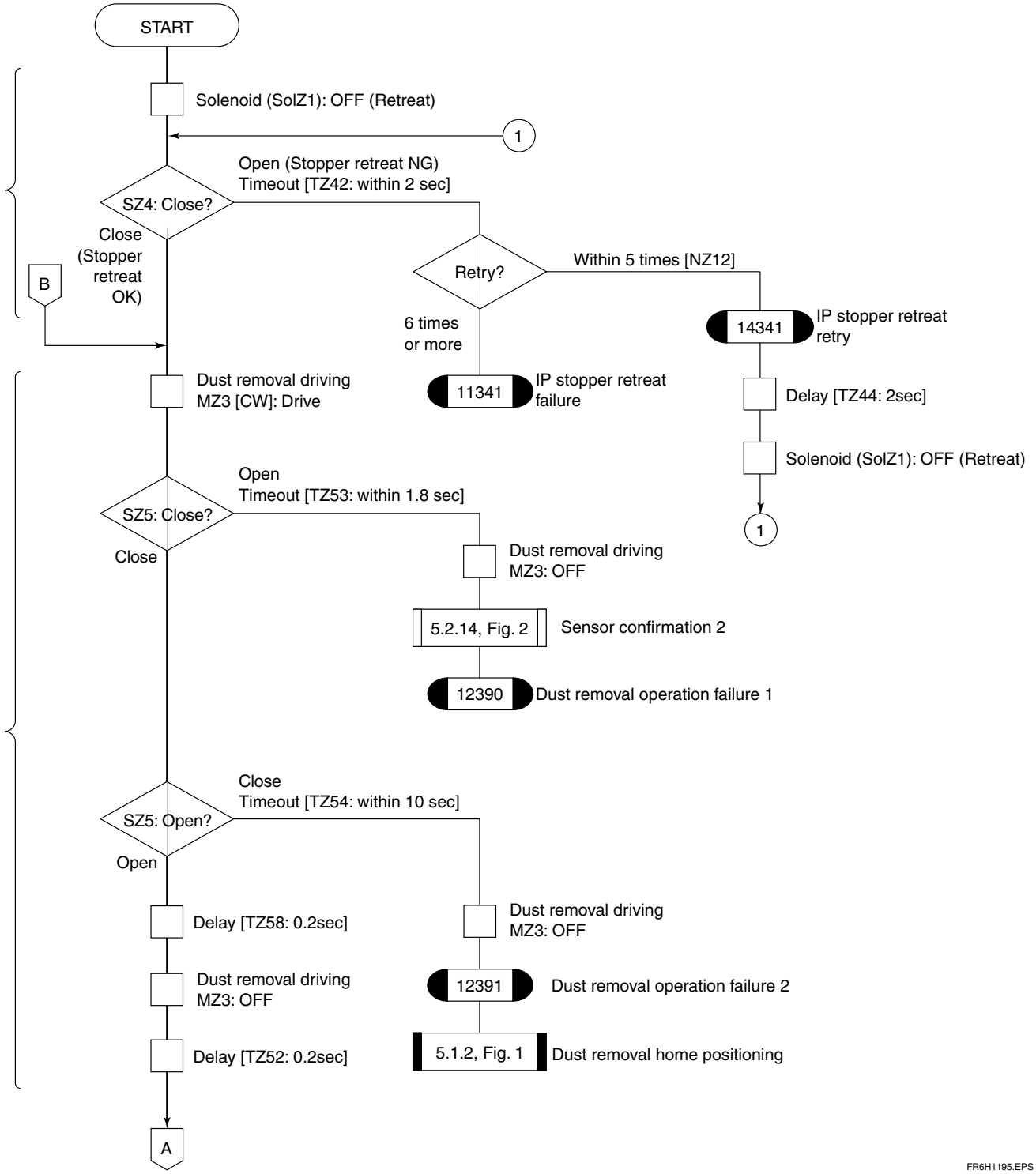
<Fig. 1 Erasure Lamp Lighting Flow>

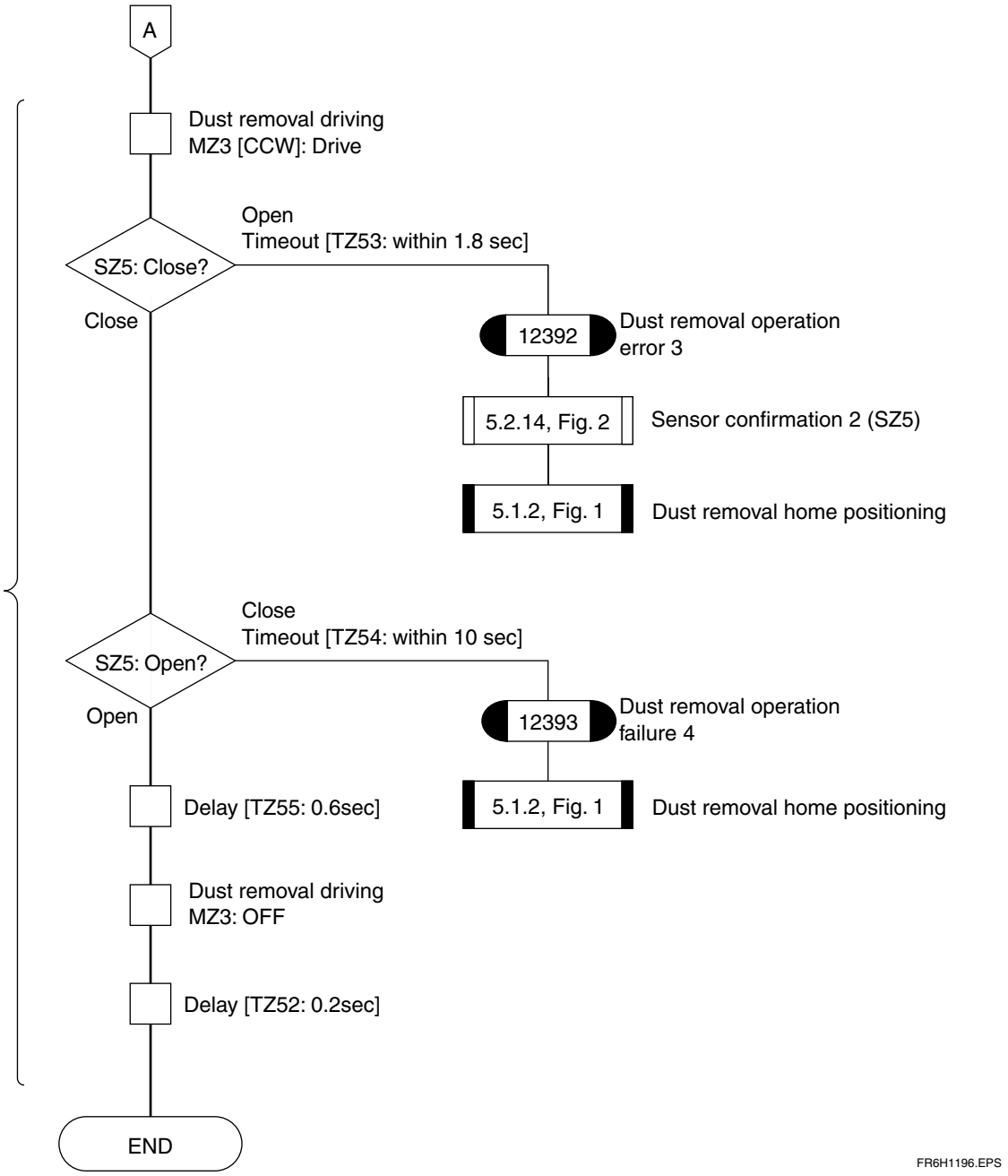


5.4 User Utility Operation

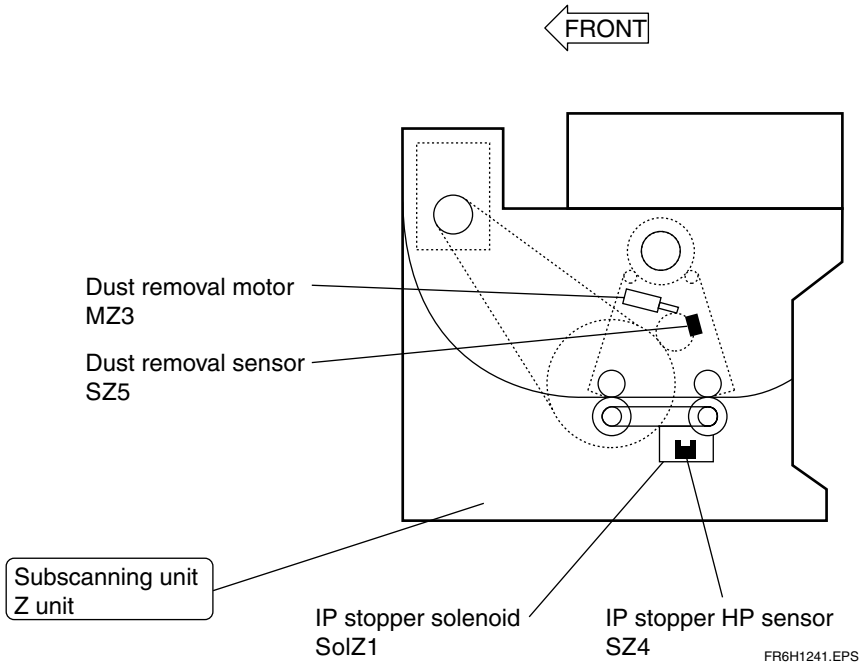
5.4.1 Dust Removal

<Fig. 1 Dust Removal Flow>




A
Dust removal driving
MZ3 [CCW]: Drive
Open
Timeout [TZ53: within 1.8 sec]
SZ5: Close?
Close
12392
Dust removal operation
error 3
5.2.14, Fig. 2
Sensor confirmation 2 (SZ5)
5.1.2, Fig. 1
Dust removal home positioning
Close
Timeout [TZ54: within 10 sec]
SZ5: Open?
Open
12393
Dust removal operation
failure 4
Delay [TZ55: 0.6sec]
5.1.2, Fig. 1
Dust removal home positioning
Dust removal driving
MZ3: OFF
Delay [TZ52: 0.2sec]
END
FR6H1196.EPS

<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
MZ3	Dust removal	Brushless DC motor	Removes dust on the light-collecting guide and mirror.
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SZ5	Dust removal HP sensor	PI (5mm)	Detects that the dust removal brush is in its home position.
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.

TR6H1089.EPS

<Sensor ON/OFF Status>

SZ4/SZ5

OFF: Open (not blocked) ON: Close (blocked)

FR6H1265.EPS

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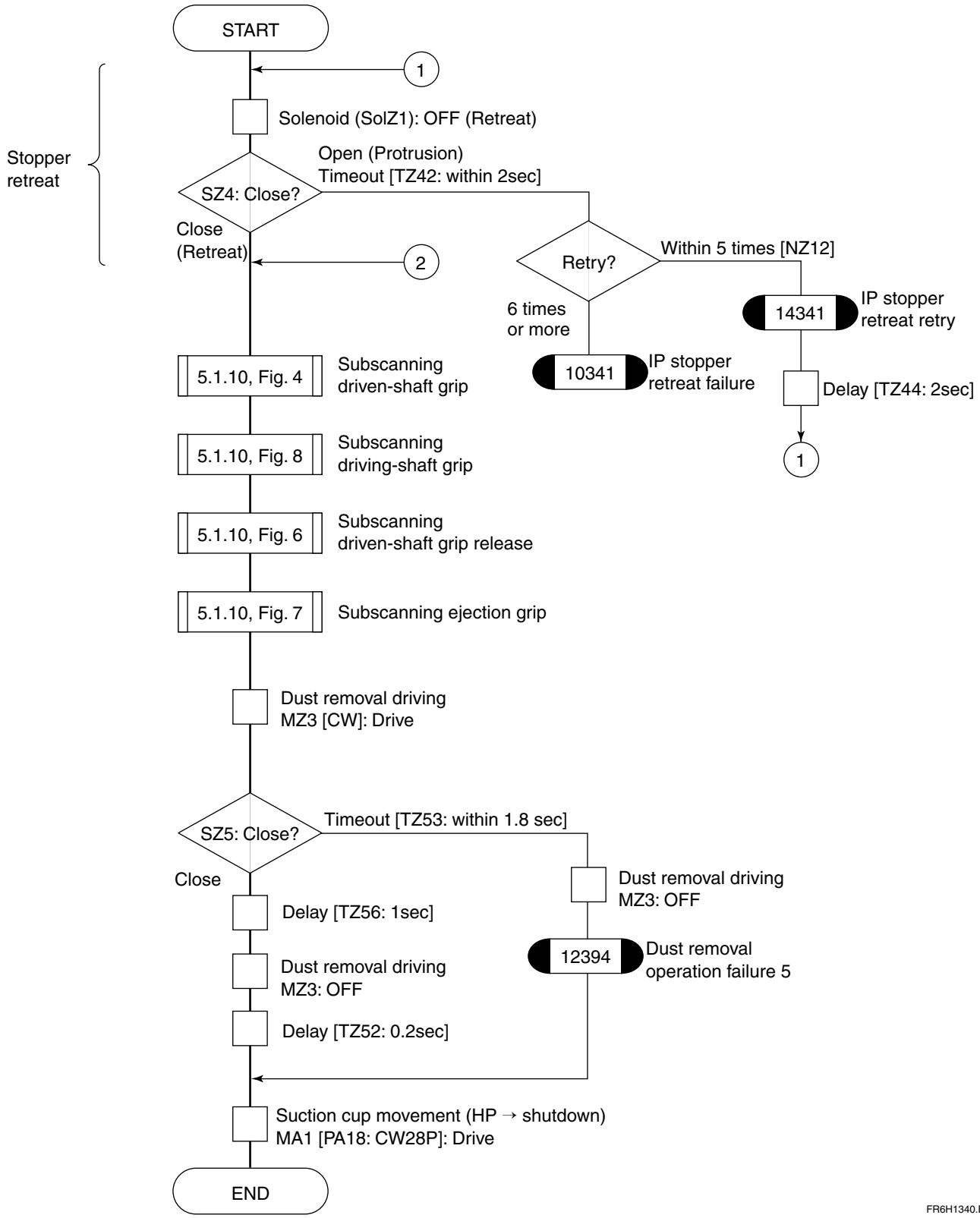
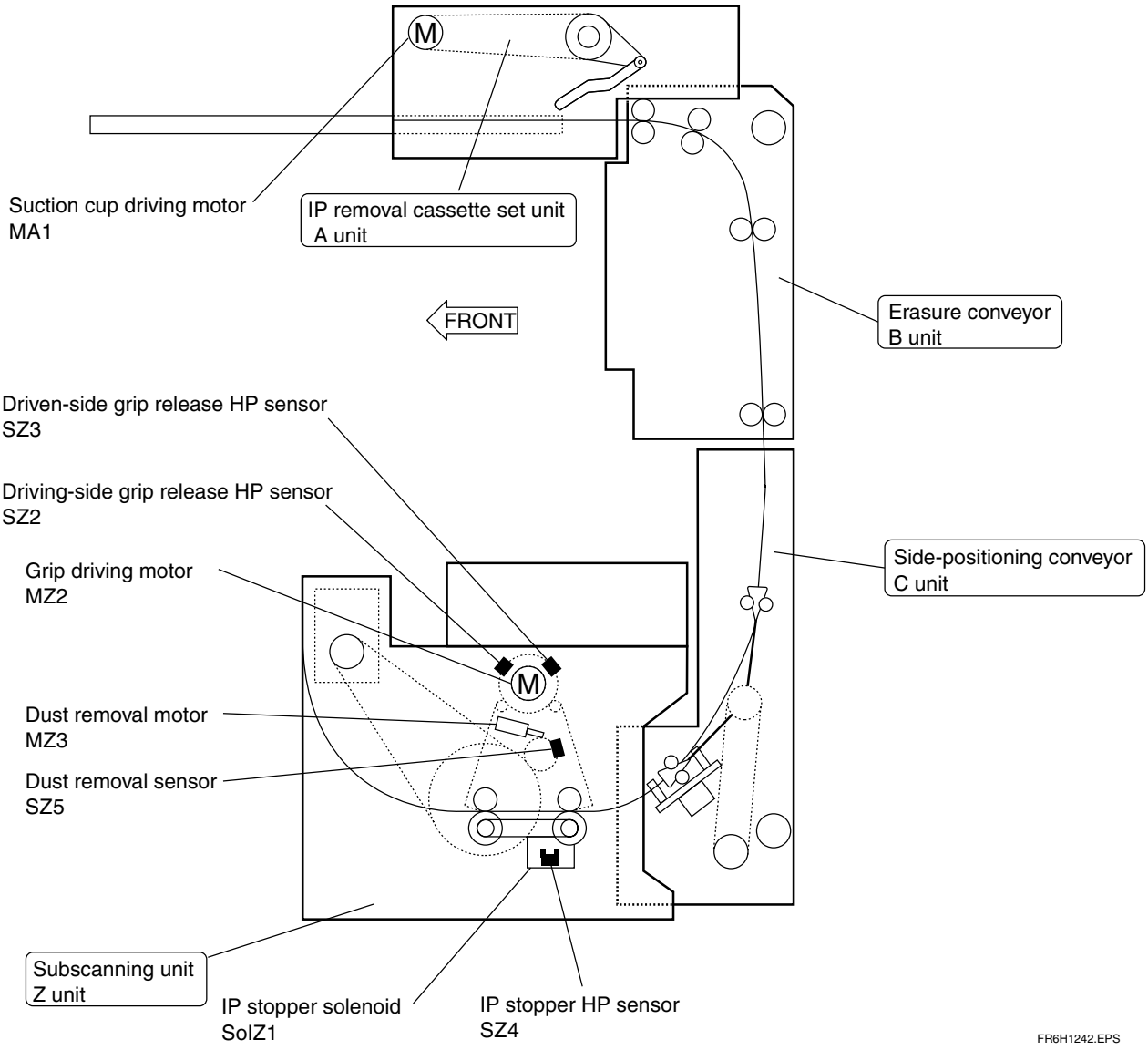
5.5 Shutdown Processing Flow

<Fig. 1 Shutdown Processing Flow>



<I/O Locations>



<I/O Table>

Symbol	Name	Type	Function
MZ2	Grip driving	DC motor	Speed correction capability (equivalent to DPR).
MZ3	Dust removal	Brushless DC motor	Removes dust on the light-collecting guide and mirror.
SZ2	Driving-side grip release HP sensor	PI (5mm)	Detects that the driving side is in grip released mode.
SZ3	Driven-side grip release HP sensor	PI (5mm)	Detects that the driven side is in grip released mode.
SZ4	Stopper HP sensor	PI (5mm)	Detects that the IP stopper is in its home position.
SZ5	Dust removal HP sensor	PI (5mm)	Detects that the dust removal brush is in its home position.
SolZ1	Stopper driving SOL	Power-down solenoid	Protrudes the stopper when turned ON.
MA1	Suction cup driving motor	Pulse motor	Opens the rear cover of the cassette and moves the roller.

TR6H1062.EPS

<Sensor ON/OFF Status>

SZ2/SZ3/SZ4/SZ5

OFF: Open (not blocked)

ON: Close (blocked)

FR6H1266.EPS

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